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Flying Operations

GENERAL FLIGHT RULES

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This instruction implements AFPD 11-2, *Aircrew Operations*, by prescribing general flight rules that govern the operation of USAF aircraft (manned and unmanned) flown by USAF pilots, pilots of other services, foreign pilots, and civilian pilots. This instruction applies to Air Force activities operating aircraft on loan or lease, to the extent stipulated in the loan or lease agreement; Air Force Reserve Command (AFRC) units; and to Air National Guard (ANG) units. Public Aircraft Operations (PAO) under government contract for Air Force operations will comply with stipulations documented in written declaration of public aircraft status, applicable Title 14 Code of Federal Regulations (CFR) and this regulation. Waiver information, in accordance with AFI 33-

360 tiering, may be found in Chapter 1. Non-tiered compliance items in this instruction that are targeted for units above the wing or equivalent and above DRUs/FOAs may be waived by the MAJCOM/CC (delegable no lower than the MAJCOM Director), with the concurrence of HQ USAF/A35 unless otherwise noted. This publication may be supplemented, but all supplements above wing or equivalent level must be routed to HQ AFFSA/XOF for coordination prior to certification and approval. Air Force Instruction (AFI) 11-2 Mission Design Series (MDS) Specific, Volume 3 instructions (e.g., AFI 11-2KC-10, Volume 3) may contain specific operational guidance unique to individual aircraft and crew positions. MDS-specific, Volume 3 instructions will not be less restrictive than this instruction. Address questions concerning this instruction to Headquarters Air Force Flight Standards Agency (HQ AFFSA) at HQ AFFSA/XOF, 6500 S. MacArthur Blvd, Bldg 4, Room 240, Oklahoma City, OK 73169, email: **hqaffsa.xof@us.af.mil**. See Attachment 1 for a list of terms and abbreviations. Use AF Form 847, *Recommendation for Change of Publication*, to recommend changes to this instruction in accordance with (IAW) AFI 11-215, *USAF Flight Manuals Program (FMP).*The reports in this directive are exempt from licensing according to AFI 33-324, *The Air Force Information Collections and Reports Management Program*. Ensure that all records created as a result of processes prescribed in this publication are maintained IAW Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

(ACC) AFI 11-202V3, *General Flight Rules*, is supplemented as follows: This supplement applies to Air Combat Command, Air Force Reserve (AFR) and Air National Guard (NGB) units under ACC oversight. This publication applies to members of other commands, direct reporting units (DRUs) and field operating agencies (FOA) (assigned and attached) when performing crew duties in ACC aircraft or when under ACC tactical control (TACON). This supplement also applies to members of CONUS-based foreign military flying training programs and their aircraft operating under ACC oversight. If guidance in this supplement conflicts with AFI/AFMAN 11-2 MDS-Specific, Volumes 3, and equivalent foreign instructions, the more restrictive guidance will be used unless otherwise noted. Ensure that all records created as a result of processes prescribed in this publication are maintained IAW Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW Air Force Records Information Management System Records Disposition Schedule. Waiver authority for all non-tiered statements in this supplement is ACC/A3 (AFRC to AFRC/A3D, ANG to NGB/A3O). Units will submit all parent waiver requests via AF Form 679, *Air Force Publication Compliance Item Waiver Request/Approval* to the OPR (ACC/A3TV) for forwarding to Air Force Flight Standards Agency (AFFSA), if required. Send suggested improvements to this supplement on AF Form 847, *Recommendation for Change of Publication*, through channels, to ACC/A3TV, 204 Dodd Blvd., Suite 133, Joint Base Langley-Eustis VA 23665-2789. This publication may be supplemented at any level, but all supplements must be routed to the OPR of this publication for coordination prior to certification and approval.

SUMMARY OF CHANGES

This document has been substantially revised and needs to be completely reviewed. Major changes include: (1) correcting administrative and grammatical errors, (2) changing tier compliance items

per AFI 33-360, *Publications and Forms Management*, (3) adding departure decision flow chart to appendix, (4) outlining waiver processes for each tiered item, (5) incorporating flight duty period changes, (6) clarifying airfield lighting requirements, (7) updating RNAV 1801 requirements, (8) clarifying authorized weather sources, (9) correcting alternate weather requirements, (10) clarifying DVAs, (11) clarifying disaster area operations, (12) clarifying cold weather altitude corrections, (13) removed MAJCOM ability to waive alternate weather requirements IAW the CFR, (14) removed MAJCOM/A3 ability to authorize any airfield as an alternate regardless of weather conditions IAW the CFR, (15) adopts AF Form 679 and (16) other minor changes.

(ACC) This interim change revises AFI 11-202V3, ACC Supplement by adding OC/RC/TC/WC-135 aircraft to the authorization to fly Visual Meteorological Conditions (VMC) approaches at night in **paragraph 7.17.** A margin bar (|) indicates newly revised material.

SUMMARY OF CORRECTIVE ACTIONS

(ACC) 19 March 2020, EC-130 was wrongly omitted from para 7.17.1. with IC2 and has been corrected. 25 March 2021, corrected hyperlink in paragraph 1.8.

Chapter 1

ROLES AND RESPONSIBILITIES

1.1. General.

1.1.1. **Pilot in Command Authority.** The Pilot in Command (PIC), regardless of rank, is responsible for, and is the final authority for the operation of the aircraft.

1.1.2. This AFI provides broad guidance and cannot address every situation. Aircrew will use best judgment to safely conduct flying operations.

1.1.3. Supplemental information to this AFI may be found in the AFMAN 11-217 series and applicable Major Command (MAJCOM) supplements.

1.1.4. This instruction is a common source of flight directives that includes:

1.1.4.1. Air Force guidance;

1.1.4.2. Title 14 Code of Federal Regulations (CFRs) and the Aeronautical Information Manual (AIM); and,

1.1.4.3. International Civil Aviation Organization (ICAO) Standards and Recommended Practices (SARPs).

1.1.5. Unmanned Aircraft System (UAS) or Remotely Piloted Aircraft (RPA) applicability.

1.1.5.1. Category 4 and 5 UAS operations shall follow this AFI; Category 1-3 ("Small") UAS shall be governed by AFI 11-502V3, *Small Unmanned Aircraft Systems Operations.* UAS categories are listed in AFI 11-502V3.

1.1.6. **(Added-ACC)** For the purposes of this supplement, the terminology "Fighter" means all "F-", "A-" and "T-" coded aircraft under ACC command including the T-38 Companion Trainer Program (CTP) and Adversary Air (ADAIR). When appropriate, this supplement identifies guidance specific to those programs.

1.2. Waivers. Directive guidance (will, shall, must, etc.) throughout this regulation are tiered IAW AFI 33-360, *Publications and Forms Management*. For examples of waivers and waiver authorities, see AFI 33-360. HAF/A3 designates HAF/A35 as waiver authority on all Tier-0 and Tier-1 waivers.

1.2.1. **Waiver Process.** MAJCOMs (or subordinate units for T-2 and T-3 waivers) initiate and staff all waiver packages. Coordination through HQ AFFSA/XOF (**hqaffsa.xof@us.af.mil**) is required for Tier 0 and 1 waivers and is recommended for Tier 2 and 3 waivers. Once waiver is approved, MAJCOM Stan/Eval will send an informational copy to HQ AFFSA/XOF within 5 duty days. Verbal concurrence is not authorized for T-0 waivers. Verbal waivers for all other tiers is not recommended except in support of time-critical missions or circumstances; written documentation following verbal concurrence IAW AFI 33-360 will occur within 24 hours (T-1).

1.2.1.1. **Tier 0:** Annotated by "(T-0)". Determined by respective non-AF authority (e.g. Congress, White House, Secretary of Defense, Joint Staff, etc.). The waiver authority is external to AF.

1.2.1.1.1. Coordination is required through HQ AFFSA/XOF for Tier 0 waivers. In most cases, HQ AFFSA/XOF will pursue external agency concurrence and provide results to MAJCOM (e.g. an Exemption to the CFRs granted by the Federal Aviation Administration (FAA) Administrator). MAJCOM/CC (delegable no lower than MAJCOM Director) issues waiver after MAJCOM obtains necessary non-AF authority permission and HAF/A35 concurrence.

1.2.1.1.1.1. When Host Nation (HN) concurrence is required, OCONUS MAJCOMs will coordinate Tier 0 waiver requests with the respective HN.

1.2.1.1.2. Tier 0 guidance may include FAA guidance from the CFRs or ICAO guidance from the SARPs.

1.2.1.2. **Tier 1:** Annotated by "(T-1)". Non-compliance puts Airmen, commanders or the USAF strongly at risk of mission or program failure, death, injury, legal jeopardy or unacceptable fraud, waste or abuse.

1.2.1.2.1. MAJCOM Stan/Eval shall coordinate with HQ AFFSA/XOF when initiating Tier 1 waivers. MAJCOM/CC (delegable no lower than MAJCOM Director) issues waiver after MAJCOM obtains HAF/A3 concurrence (delegated to HAF/A35).

1.2.1.2.2. Tier 1 includes guidance that lends to standardization across all USAF wings and platforms.

1.2.1.3. **Tier 2:** Annotated by "(T-2)". Non-compliance may degrade mission or program effectiveness or efficiency and has potential to create moderate risk of mission or program failure, injury, legal jeopardy or unacceptable fraud, waste, or abuse.

1.2.1.3.1. MAJCOM Stan/Eval will request MAJCOM/CC (delegable no lower than MAJCOM/A3) approval for all Tier 2 waivers. Tier 2 waivers only apply within the approving MAJCOM.

1.2.1.3.2. Tier 2 guidance includes instruction that lends to standardization across MAJCOM-specific wings and platforms.

1.2.1.4. **Tier 3** : Annotated by "(T-3)". Non-compliance may limit mission or program effectiveness or efficiency and has a relatively remote potential to create risk of mission or program failure, injury, legal jeopardy or unacceptable fraud, waste, or abuse.

1.2.1.4.1. Wing commanders, delegable no lower than operations group commanders or equivalent, will initiate and approve Tier 3 waiver requests. Once approved, wings will send an informational copy to MAJCOM Stan/Eval and HQ AFFSA/XOF within 5 duty days.

1.2.1.4.2. Tier 3 guidance includes instruction that is limited to wing and installation specified rules that do not affect AF-level standardization.

1.2.2. For the purposes of this instruction, flying MAJCOMS are: ACC, AETC, AFDW, AFGSC, AFMC, AFRC, AFSOC, AMC, DIA, NGB, PACAF, and USAFE. Commanders Air Force forces (COMAFFORs) in the grade of O-8 or higher in Combatant Commands (CCMDs) are considered MAJCOM commanders only for forces under their operational control.

1.2.3. MAJCOMs must obtain a waiver to AFI 33-360 if delegation to other "waiver authorities" than those listed in Table 1.1 of AFI 33-360 is desired.

1.2.4. Waivers should be submitted using AF Form 679, *Air Force Publication Compliance Item Waiver Request/Approval* or as directed in AFI 33-360.

1.3. Compliance. The PIC will ensure compliance with this AFI and the following (see Attachment 1 for related publications):

1.3.1. Air Force, MAJCOM, and Mission Design Series (MDS)-specific instructions;

1.3.2. Flight Information Publications (FLIP) and Foreign Clearance Guide (FCG);

1.3.3. Air Traffic Control (ATC) clearances;

1.3.4. Notices to Airmen (NOTAMs), aircraft technical orders; and,

1.3.5. Combatant Commander's instructions and other associated directives IAW the Air Component Commander's objectives.

1.4. Operational Prerogative of Military Aircraft. When operationally necessary, PICs are authorized to conduct military flight operations with due regard for the safety of navigation of civil traffic in international airspace IAW FLIP *General Planning* (GP). Except for pre-planned missions, PICs shall consider such operations in peacetime as a flight rule deviation and will comply with the reporting requirements in **paragraph 1.6**. (T-0). MAJCOMs may authorize tactical operations for training and compliance with paragraph 1.3.

1.5. MAJCOM Supplements. MAJCOM supplements shall not be less restrictive than this instruction and be IAW AFI 33-360. Submit supplements to HQ AFFSA/XOF (**hqaffsa.xof@us.af.mil**) for coordination prior to publishing.

1.5.1. Tier 0 and 1 waivers shall not be published in MAJCOM supplemental guidance.

1.5.2. **(Added-ACC)** ACC units and units under ACC oversight will publish a local supplement to the AFI/AFMAN11-2MDS-Specific Volume 3.

1.6. Deviations. An ATC clearance is not authority to deviate from this instruction. A PIC may only deviate from this instruction, flight rule, or ATC clearance to protect life, for safety of flight, or when an in-flight emergency requires immediate action.

1.6.1. **Notification.** When deviating from an ATC clearance, notify ATC of the action taken as soon as possible.

1.6.2. **Post-Flight Actions.** In the event of a deviation from a flight rule and/or when given traffic priority by ATC in an emergency, the PIC will verbally report the incident to a supervisor and commander within 24 hours of the incident and shall make a detailed written record (T-0). The unit will keep a copy of the record for a minimum of 1 year from the date of the incident and be prepared to provide the record to the appropriate investigating authority if required (T-0).

1.7. Violations. A violation may result when a USAF aircraft deviates from flight rules. FAA ATC deviation reports involving a USAF aircraft are processed by the Air Force Representative to the FAA (AFREP) IAW AFI 13-201, *Airspace Management*. Air Force ATC deviation reports involving USAF aircraft are processed IAW AFI 91-202, *The US Air Force Mishap Prevention Program*. Violations that occur in the airspace of foreign nations are processed IAW the procedures of that nation.

1.7.1. For any alleged violation, utilize aircraft call-sign for any contact with ATC. Do not release names or personal information of crewmembers to non-USAF agencies without the permission of the AFREP in coordination with the MAJCOM/A3 or HQ USAF/A35.

1.7.2. If notified by an AFREP of a possible violation, MAJCOMs will preserve any available evidence for a minimum of 180 days and will contact the AFREP prior to disposal.

1.7.3. **(Added-ACC)** Forward investigation results to ACC/A3TV.

1.8. Aviation Safety Reporting. Potential hazards to aviation safety should be reported via the military Aviation Safety Action Program (ASAP) (**https://asap.safety.af.mil**). Incidents involving damage to aircraft, personal injury, or intentional disregard of orders or instructions, whether reported to ASAP or not, shall be reported to a Flight Safety Officer (FSO) as soon as possible (T-0). Report hazardous air traffic events IAW AFMAN 91-223, *Aviation Safety Investigations and Reports.*

1.9. Airworthiness. For all issues concerning aircraft airworthiness certification, refer to AFI 62-601, *USAF Airworthiness*.

1.10. Communication, Navigation, Surveillance (CNS) Certification and Approval. USAF aircraft and aircrews must comply with the performance requirements and specifications appropriate for the route, procedure, and airspace unless exemptions or special procedures for non-equipped aircraft are granted (T-0).

1.10.1. **Unmanned Aircraft Systems** . See paragraph 4.10.

1.10.2. **Operational Approvals** . MAJCOM CNS procedures and training should provide a level of performance and safety that is consistent with civil airspace standards. HQ AFFSA will assist MAJCOMs with Operational Approvals. Contact AFFSA/XON (**hqaffsa.xon@us.af.mil**) for capabilities that require specific operational approval.

1.10.2.1. **Lead MAJCOM responsibilities:**

1.10.2.1.1. Provide training, instructions, procedures, and minimum equipment lists for CNS capabilities to operators and maintenance personnel.

1.10.2.1.2. Receive HQ USAF/A35 endorsement for operational approvals. Initiate endorsement through AFFSA/XON. MAJCOMs may utilize endorsement from other MAJCOMs for similar platforms.

1.10.2.1.2.1. If training, instructions, procedures, or minimum equipment lists differ from the lead MAJCOM, separate endorsement for operational approval from HQ USAF/A35 is required.

1.10.2.1.3. Provide detailed MDS-specific guidance authorizing aircrew to exercise CNS capabilities including approvals, qualifications, and any restrictions or prohibitions.

1.10.2.1.4. Ensure CNS capabilities are properly certified and operationally approved IAW AFI 63-137, *Assurance of Communications, Surveillance/Air Traffic Management (CNS/ATM), Navigation Safety, and Next Generation Air Transportation System (NextGen) Performance*. Also reference AFI 63-112, *Cockpit Working Groups.*

1.10.2.2. **AFFSA responsibilities:**

1.10.2.2.1. Assist MAJCOMs with identifying and defining CNS requirements and accomplishing operational approvals.

1.10.2.2.2. Review MAJCOM approvals for consistency with civil standards and for completeness of operational procedures, flight manuals, and directives prior to staffing for endorsement.

1.11. Primary Flight Reference (PFR). Any PFR used for instrument flight shall be considered for endorsement by HQ USAF/A35. Contact HQ AFFSA/XON (**hqaffsa.xon@us.af.mil**) for PFR endorsement process.

1.11.1. USAF aircraft cockpits and UAS control stations must always be capable of providing full-time attitude, altitude, airspeed information, and the capability to recognize, confirm, and recover from unusual attitudes in all pilot positions (T-1).

1.11.1.1. UAS control stations must also display at all times: link status, link availability, lost link indications, and logic information (autopilot control mode, primary route, and contingency route) (T-1). *Exception:* Contingency route may be immediately available if not displayed at all times.

1.11.1.2. Lead Commands will define display requirements for aircraft not certified or authorized for instrument flight (T-1).

1.11.2. MAJCOMs will issue guidance for configuration of pilot-selectable flight displays. In actual instrument meteorological conditions (IMC) or when there is no discernible visual horizon, an HQ USAF/A35-endorsed PFR shall be displayed in the pilot flying position.

1.11.2.1. **(Added-ACC)** Flight Instrumentation. Aircraft equipped with an attitude indicator system which has two primary or a primary and standby (or backup) mode will have both modes/systems operational for night and IMC flights. For any instrument that presents both analog and digital information, either presentation is acceptable at the PICs discretion. In aircraft with tandem cockpits, the flight instruments must be operative in both cockpits during night/IMC flights, when both cockpits are occupied by aircrew performing crew duties. Do not accept aircraft from factories, modification centers or depots unless all flight instruments are installed and operative.

Chapter 2

FLIGHT READINESS

2.1. Crew Rest. Crew rest is compulsory for aircrew members prior to performing any duties involving aircraft operations and is a minimum of 12 non-duty hours before the Flight Duty Period (FDP) begins (T-2). Crew rest is free time and includes time for meals, transportation, and rest. This time must include an opportunity for at least 8 hours of uninterrupted sleep. Crew rest period cannot begin until after the completion of official duties.

2.1.1. Aircrew members are individually responsible to ensure they obtain sufficient rest during a crew rest period.

2.1.2. Once crew rest begins, any official business interrupts the crew rest period. If crew rest is interrupted, individuals will immediately inform appropriate leadership or command and control (C2) and will either begin a new crew rest period or not perform flight duties (T-2). **Exception:** PIC (or designee) may initiate mission-related communication with official agencies without interrupting crew rest.

2.1.3. **Exceptions to the 12-Hour Minimum Crew Rest Periods** . For continuous operations when basic aircrew FDPs are between 12 to 14 hours, subsequent crew rest may be reduced to a minimum of 10 hours by the PIC in order to maintain a 24-hour work/rest schedule (T-2). "Continuous operations" is defined as three or more consecutive FDPs of at least 12 hours duration with minimum crew rest period.

2.1.3.1. The 10-hour crew rest exception shall only be used to keep crews in 24-hour clock cycles, not for scheduling convenience or additional sortie generation (T-2).

2.1.3.2. Any reduction from 12-hour crew rest requires pre-coordination for transportation, meals, and quarters so that crewmembers are provided an opportunity for at least 8 hours of uninterrupted sleep (T-2).

2.2. Flight Duty Period (FDP) (see Table 2.1). FDP may be waived by MAJCOM/A3 when an ORM assessment determines that mission requirements justify the increased risk. At MAJCOM/A3 discretion, waiver authority may be further delegated to no lower than the operations group commander (or equivalent).

2.2.1. FDP begins when an aircrew member reports for a mission, briefing, or other official duty and ends at final engine shutdown after the final flight of the completed mission. FDP for UAS aircrew member ends at final engine shutdown, final in-flight handover briefing, or final crew swap, whichever occurs last.

2.2.2. When authorized by the waiver authority, the PIC may extend FDP a maximum of 2 hours to compensate for mission delays.

2.2.3. **(Added-ACC) [N/A AFRC/ANG]** The U-2 transition duty day is as follows:

2.2.3.1. **(Added-ACC)** U-2 pilots flying solo: 8 hours when wearing a pressure suit.

2.2.3.2. **(Added-ACC)** U-2ST pilots: 12 hours, when a qualified pilot occupies both seats; 10 hours if only one pilot is qualified; 8 hours when wearing a pressure suit.

2.2.4. **(Added-ACC)** Extend transition duty day to 16 hours for flight evaluations conducted in OC/RC/TC/WC-135 aircraft.

2.2.5. **(Added-ACC)** For active PR and Operational Support missions already in progress, HH-60 PICs may extend their crew duty day up to 2 hours. On operational support missions that have been extended, do not perform low-level operations, tactical approaches or AIE maneuvers during the extension.

2.3. Post-Flight Duties. If official post-flight duties are anticipated to exceed 2 hours, commanders should consider reducing the FDP to ensure the safe completion of those duties.

Table 2.1. Maximum FDP (Hours).

Aircraft Type	**Basic Aircrew**	**Augmented Aircrew**
Single Piloted Aircraft	12	NA
Fighter, Attack or Trainer (Dual Control)	12	16
Bomber, Reconnaissance, Electronic Warfare, or Battle Management (Dual Control)	16	24
Tanker/Transport	16	NA
Tanker/Transport with Sleeping Provisions[1]	16	24
Rotary Wing (without Auto Flight Control System)	12	14
Rotary Wing (with Auto Flight Control System)	14	18
Utility	12	18
Unmanned Aircraft System (Single Control)	12	NA
Unmanned Aircraft System (Dual Control)	16	NA
Tilt-rotor	16	NA
NOTE 1: *Sleeping provisions are crew bunks or other MAJCOM-defined rest facilities aboard the aircraft. Rest facilities should provide adequate privacy and noise levels to obtain suitable rest.*		

2.4. Deadhead Time. Deadhead time is an official duty performed by an aircrew member flying as a passenger (no flight-related duties performed) while on flight orders and may be flown without crew rest.

2.4.1. If flight-related duties are planned to be performed following deadheading, crew rest and FDP restrictions apply (T-2).

2.4.2. If in-flight or crew-specialty related duties (e.g., aircraft off-loading or performance data calculations) are performed in conjunction with deadheading, crew rest and FDP restrictions apply (T-2).

2.4.3. Deadhead crewmembers will be annotated as Mission Essential Personnel (MEP) on the Flight Authorization IAW AFI 11-401, Aviation Management (T-1).

2.5. Alert Duty. MAJCOMs establish alert and compensatory periods in keeping with mission requirements and risk management (RM).

2.5.1. **(Added-ACC)** Alert Duty:

2.5.1.1. **(Added-ACC)** Alert Scheduling. Do not schedule an aircrew member for more than 7 days of continuous alert duty, exercises or training. Aircrews scheduled for a 7-day

alert tour should be allowed a period of free time away from the alert facilities during their tour. Following a 7-day tour, an aircrew must have a minimum of 24 hours rest time away from the alert site before beginning a subsequent alert tour. If aircrew swap-out is delayed following a 7-day tour, an aircrew may extend for one 24 hour period with Sector/DO approval. Schedule aircrew as required to support actual OPLAN execution. Crew management during actual OPLAN execution should be based on continuing alert operations indefinitely.

2.5.1.2. **(Added-ACC)** Travel to Alert Site. The flight duty period for alert aircrews traveling to alert via commercial air begins one hour prior to scheduled commercial air takeoff. The flight duty period for alert aircrews traveling to alert via military air begins upon arrival at the squadron for mission preparation/briefing. Upon assuming alert duties, the aircrew enters crew rest (as defined in paragraph **2.5.1.3.3**). For same day aircrew swap-outs at the end of the aircrews' 12-hour crew duty day, the units go on mandatory scramble order (MSO) status until aircrews have completed an 8-hour crew rest period. After obtaining required crew rest, aircrews may begin a duty period not to exceed 12 hours.

2.5.1.3. **(Added-ACC)** Flight Duty on Alert. Initial flight duty period is as displayed in **Table 2.1** and begins with the first squadron duty, alert changeover or ANG civilian work, whichever occurs first. After getting crew rest on alert (paragraph **2.5.1.3.3**), subsequent flight duty periods begin with any official tasking and will not exceed respective times shown in **Table 2.1**. Aircrew will enter crew rest at expiration of the flight duty period **(T-3).**

2.5.1.3.1. **(Added-ACC)** Planned Tasking. Planned tasking (e.g., training sorties, aircraft swaps, etc.) will not exceed the flight duty period. If an actual alert tasking results in an aircrew member exceeding the flight duty period, replace or put the crewmember on MSO status until crew rest is obtained.

2.5.1.3.2. **(Added-ACC)** Normal Sleeping Hours. Except for actual alert or real-world tasking, do not disturb alert crews from 2200-0600L. For any planned missions (actual alert or training) that start during or extend into the period 2200-0600L, make all possible attempts to notify aircrew members in enough time for mission preparation and crew rest. Any tasking or duty accomplished by the aircrew during this period is considered official tasking and resets crew rest and crew duty day calculations. This includes those duties in paragraph **2.5.1.3.3** that do not normally affect crew rest and crew duty day calculations such as obtaining weather, NOTAMS, power-on checks and aircraft acceptance.

2.5.1.3.3. **(Added-ACC)** Crew Rest on Alert. Once provided the opportunity for at least 8 hours uninterrupted rest, an aircrew member may start a new alert flight duty period. The crew rest period for alert is defined as the period when "official alert duties" are not being performed. Crew rest is free time, which includes time for meals and rest. "Official alert duties" are defined as alert crew response to include “scrambles”, alert briefing, pre-daily flight, runway alert, cocking the aircraft or a suit-up call, aircraft/aircrew changeover, change to Combat Mission Folder material, change to maintenance that requires aircrew at aircraft . "Official alert duties" do not include checking weather, NOTAMS, power-on checks (oxygen/light checks) i.e., those checks

accomplished without engine start or aircraft acceptance (walk around and forms check) if performed during normal waking hours (0600-2200L).

2.5.1.3.4. **(Added-ACC)** Restricted Status. If the air defense sector and the unit determine that they need to place an aircrew member into crew rest due to probable future tasking, they may place the unit on restricted status. When on restricted status, alert crews are in crew rest. This is distinct from MSO status and does not require up-channel reporting or prevent other HHQ tasking.

2.5.1.3.5. **(Added-ACC)** Sortie Limits. An aircrew member may fly up to three sorties during a flight duty period. Alert scrambles do not have a day/night combination limit. Upon reaching the sortie limit, replace the aircrew member or put on MSO status until crew rest is obtained.

2.5.1.3.6. **(Added-ACC)** Post-alert Status. An alert aircrew member may perform a normal flight duty period if crew rest requirements are met IAW paragraph **2.1**. The post-alert duty day begins at changeover, daily alert briefing, scramble activity (including battle stations or a "suit-up" call) or other official tasking, whichever occurs first.

2.5.1.3.7. **(Added-ACC)** Squadron Supervision. Squadron supervisors recalled to perform supervisory/SOF duties during an actual scramble do not need to meet crew rest requirements for that duty. However, they must obtain required crew rest before returning to duty if scheduled to fly.

2.5.1.4. **(Added-ACC)** Alert Contingencies. Alert duty is a dynamic environment and as such all contingencies cannot be addressed. An alert aircrew or alert site commander may put the site on restricted or MSO status at any time due to crew rest considerations (actual/planned tasking, fatigue or other factors). The preservation of lives and assets should be the overriding factor in all crew rest decisions.

2.5.1.4.1. **(Added-ACC)** Wing Commanders will make all crew rest decisions balancing safety with mission accomplishment (**T-3)**. For training, exercises, or inspections that are not linked to real-world events, wing leadership and/or Inspector General Team Chief will ensure schedules allow for adherence to crew rest and flight duty period restrictions **(T-3).** Wing leadership is responsible for notifying personnel if an exercise/training/inspection generation changes to a real world generation.

2.5.2. **(Added-ACC) Alert Duty Forces in support of USSTRATCOM** . All of section **2.5.1** applies with the following addition.

2.5.2.1. **(Added-ACC)** All aircrew will respond to a report to aircraft, klaxon or klaxon advisory in accordance with applicable directives, regardless of flight duty period or crew rest limitations and accomplish required actions. However, do not violate crew rest during training, exercises or inspections. During actual OPLAN execution, compliance with crew rest requirements is encouraged but not required.

2.6. Maximum Flying Time . Maximum flying time is 56 flight hours per 7 consecutive days, 125 flight hours per 30 consecutive days, and 330 flight hours per 90 consecutive days.

2.6.1. Maximum flying time may be waived by MAJCOM/A3 when an ORM assessment determines that mission requirements justify the increased risk. At MAJCOM/A3 discretion,

waiver authority may be further delegated to no lower than the operations group commander (or equivalent).

2.6.1. **(ACC)** The maximum flying time for Fighter aircrew members will be 75 hours per 30 consecutive days and 200 hours per 90 consecutive days. Deployment and redeployment sorties do not count for this total.

2.7. Flight Readiness Limitations .

2.7.1. Aircrew members will not fly:

2.7.1.1. Anytime the crewmember has not obtained the appropriate crew rest IAW **paragraph 2.1**. (T-2).

2.7.1.2. If any alcohol is consumed within 12 hours prior to takeoff (or assuming aircraft control for UAS) or if impaired by alcohol or any other intoxicating substance, to include the effects or after-effects (T-0).

2.7.1.3. Anytime a physical or psychological condition is suspected or known to be detrimental to the safe performance of flight duty. Consult a flight surgeon at the earliest opportunity.

2.7.1.4. While self-medicating, except IAW the "Official Air Force Aerospace Medicine Approved Medications" found in AFI 48-123, *Medical Examinations & Standards* (T-1).

2.7.1.5. Within 24 hours of compressed gas diving including SCUBA, surface supplied diving, hyperbaric (compression) chamber exposure, or aircraft pressurization checks exceeding 10 minutes in duration below sea level; these restrictions not applicable to UAS flight operations (T-1). **Exceptions:** Following Helicopter Emergency Egress Device System (HEEDS) training, aircrew may only fly within the 24-hour window if the aircraft's maximum altitude remains below 10,000 ft. MSL. Air Force divers on aeronautical orders will follow guidelines IAW SS521-AG-PRO-010 U.S. Navy Diving Manual for flying and diving restrictions (T-1).

2.7.1.6. Within 12 hours after completion of a hypobaric (altitude) chamber flight above 25,000 ft. mean sea level (MSL) (T-1). Personnel may fly as passengers in aircraft during this period provided the planned mission will maintain a cabin altitude of 10,000 ft. MSL or less. For altitude chamber flights to a maximum altitude of 25,000 ft. MSL or below, aircrew members may fly without restriction as crewmembers or passengers if cabin altitude is not planned to exceed 15,000 ft. MSL (this restriction not applicable to UAS flight operations). There are no restrictions following Reduced Oxygen Breathing Device (ROBD) training.

2.7.1.7. Within 72 hours after donating blood, plasma, or bone marrow (T-1).

2.7.1.8. **(Added-ACC)** Aircrew crossing four or more time zones within a 24-hour period, (e.g., returning from continental United States (CONUS) leave or completing deployment to or from CONUS) will not fly a local training sortie for 48 hours. **(T-3).**

2.7.2. **Medical.** Aircrew members must maintain a medical clearance from the flight surgeon to perform in-flight duties (T-1). Medical or dental treatment obtained from any source must be cleared by a flight surgeon prior to reporting for flight duty (T-1).

2.7.2.1. Use of any medication or dietary supplements is governed by AFI 48-123 and as approved by a flight surgeon. Aircrew members will not normally self-medicate (T-1). In the absence of other MAJCOM guidance, the following is a partial list of medications that may be used without medical consultation:

2.7.2.1.1. Single doses of over-the-counter (OTC) aspirin, acetaminophen, ibuprofen to provide analgesia for minor self-limiting conditions.

2.7.2.1.2. OTC skin antiseptics, topical anti-fungals, 1% hydrocortisone cream, or benzoyl peroxide for minor wounds and skin diseases which do not hinder flying duties or wear of personal protective equipment.

2.7.2.1.3. OTC antacids for mild isolated episodes of indigestion.

2.7.2.1.4. OTC hemorrhoidal suppositories.

2.7.2.1.5. OTC bismuth subsalicylate for mild cases of diarrhea.

2.7.2.1.6. OTC oxymetazoline or phenylephrine nasal sprays may be carried should unexpected ear or sinus block occur during flight. Aircrew may only use such sprays as "get me downs." Do not use to treat head symptoms prior to flight.

2.8. Alertness Management and Fatigue Mitigation. MAJCOMs will provide guidance to address aircrew alertness and fatigue management.

2.8.1. **Fatigue Countermeasure Medications.** MAJCOMs will provide guidance on the use of go and no-go medications IAW AF/SG policy.

2.8.2. **Controlled Cockpit Rest.** Controlled cockpit rest may be implemented when the basic aircrew includes a second qualified pilot. All cockpit crewmembers must remain at their stations (T-0). Cockpit rest will be taken by only one crewmember (per crew position, as applicable) at a time, must be restricted to non-critical phases of flight during cruise, terminate one hour prior to planned descent, and should be limited to 45 minutes per rest period (T-2). More than one rest period per crewmember is permitted. Cockpit rest is not authorized when aircraft system malfunctions increase cockpit workload (e.g., autopilot, navigation systems) (T-1). The resting crewmember must be awakened immediately if a situation develops that affects flight safety (T-1). Cockpit rest shall not be a substitute for any required crew rest (T-1).

2.8.2.1. **(Added-ACC)** Controlled cockpit rest applies to crewmember positions where normal duties are performed. If aircraft have provisions for sleeping/rest, the restrictions of controlled cockpit rest do not apply and crewmembers may take rest IAW MDS-specific directives and T.O. Guidance for long duration flight kit development is addressed in AFI/AFMAN 11-2MDSV1. The PIC is the final authority for cockpit rest.

2.8.3. Flight publications describe procedures for loss of pressurization, oxygen, cockpit temperature control, inoperative autopilot, and other in-flight malfunctions or emergencies that restrict flight duration and contribute to aircrew fatigue. Such limitations within flight publications take precedence over less restrictive standards in this instruction.

2.8.4. **(Added-ACC)** Aircrew members will be afforded a minimum of 24 hours crew rest following three consecutive flight duty periods of 16 hours or more with minimum crew rest between flights.

2.9. Aircrew Flight and Survival Equipment. Wear and use authorized clothing and equipment IAW AFI 11-301, Volume 1, *Aircrew Flight Equipment (AFE) Program*; AFI 16-1301, *Survival, Evasion, Resistance and Escape (SERE) Program*; MAJCOM or wing guidance; Special Instructions (SPINS); the aircraft technical order (T.O.); and AFI 36-2903, *Dress and Personal Appearance of Air Force Personnel* (T-1).

2.9.1. **Spectacles.** Crewmembers who require corrective spectacles while performing aircrew duties must only use Air Force-provided spectacles as outlined in AFI 48-123, *Medical Examinations and Standards* (T-1). Crewmembers must also carry a spare set of clear Air Force-provided spectacles while performing aircrew duties (T-1).

2.9.2. **Sunglasses.** Consult AFI 48-123, *Medical Examinations and Standards,* to determine the types of sunglasses approved for flight (T-1).

2.9.3. **Contact Lenses.** Crewmembers who desire contact lenses must consult a flight surgeon, meet criteria, and follow guidelines outlined in AFI 48-123, *Medical Examinations and Standards* (T-1). While performing aircrew duty, comply with paragraph 2.9.1.

2.9.4. **Laser Eye Protection.** MAJCOMs that permit aircrew laser eye protection will publish specific guidance on training and use prior to in-flight use. Aircrew will follow AFI 11-301, Volume 4, *Aircrew Laser Eye Protection (ALEP)*, when potential laser hazards exists.

2.9.4.1. **(Added-ACC)** Laser Command Pointers (LCP) and Laser Eye Protection (LEP). The list of authorized LCP and LEP can be found on the AFLCMC Safe to Fly SharePoint or by contacting AFLCMC/WNU. Direct further questions to ACC/A3TOA AFE FAM. Aircrew using LCP and ALEP will follow the guidance in their MDS-Specific Volumes 3. All aircrew and ground support personnel who routinely use LCPs must receive training IAW AFI 48-139, *Laser and Optical Radiation Protection Program*, para. 2.4., and be placed on the medical surveillance program IAW AFI 48-139, para. 2.5. All aircrew members expected to operate in operational areas requiring ALEPs will be trained by AFE personnel on the proper use of laser protection devices. Additional information may be found in, AFI 11-301V1, *Aircrew Flight Equipment (AFE) Program.*

2.9.4.2. **(Added-ACC)** Aircrew that experience a laser safety incident will report those incidents to the Installation Laser Safety Officer, IAW AFI 48-139.

2.9.5. **Night Vision Devices (NVDs).** Crewmembers must undergo a MAJCOM-approved initial certification course IAW AFI 11-202, Volume 1, *Aircrew Training,* prior to their initial flight with NVDs (T-1). If wearing clear spectacles, contact lenses, or laser eye protection with NVDs, conduct preflight adjustments wearing both (T-1).

2.9.6. **Flashlights** (N/A for UAS). Each crewmember must have an operable flashlight for night operations (T-2).

2.9.7. **(Added-ACC) Seat belts, Harnesses, or Safety Belts.**

2.9.7.1. **(Added-ACC)** The PIC must ensure each occupant has an approved seat equipped with a safety belt.

2.9.7.2. **(Added-ACC)** Except for crew members performing flight examiner and instructor duties, (and not occupying a primary position), seat belts are mandatory for takeoffs and landings.

2.9.7.3. **(Added-ACC)** Passengers and crewmembers should normally wear seat belts while seated during flight to avoid injury in the event of sudden turbulence. If mission-essential duties make the wearing of a seat belt impractical, aircrew members not occupying an ejection seat are exempt from wearing a seat belt at the discretion of the PIC.

Chapter 3

GENERAL FLIGHT RULES

3.1. Professional Flying Standards.

3.1.1. **Reckless Flying.** The PIC is responsible for ensuring the aircraft is not operated in a careless, reckless, or irresponsible manner that could endanger life or property (T-0).

3.1.2. **Unauthorized Flight Demonstrations.** Unauthorized or impromptu flight demonstrations, maneuvers, events, or "fly-bys" are prohibited. AFI 11-209, *Aerial Event Policy and Procedures,* addresses authorized flight demonstrations (T-1).

3.2. Nonrated Flyers. Flying unit commanders must ensure nonrated personnel and civilians who perform in-flight duties receive an indoctrination course on MDS-specific missions, egress, emergency procedures, and use of flight and emergency equipment (T-1). A preflight briefing does not qualify as an indoctrination course.

3.3. Transporting Passengers Under the Influence. Ensure personnel suspected to be under the influence of intoxicants or narcotics are not allowed to board a USAF aircraft except in an emergency or when authorized by command and control authority (T-0).

3.4. Tobacco Use. Tobacco use in all forms, including electronic nicotine delivery systems, is prohibited on all aircraft (T-1).

3.5. Transport of Drugs. Do not allow the transport of narcotics, controlled substances, or other dangerous drugs unless such transport has been approved by a US Military, Federal, or State authority (T-0).

3.6. Hazardous Cargo. Ensure compliance with AFJI 11-204, *Operational Procedures For Aircraft Carrying Hazardous Material* (T-1).

3.7. Flight Displays. Comply with MAJCOM or MDS-specific guidance for configuration of pilot-selectable flight displays.

3.8. Authorized Resources for Flight and Mission Related Duties. Conduct flight and mission-related duties with MAJCOM-approved devices and resources. MAJCOMs will establish policy on the use of personal, public, or non-DoD resources for flight and mission duties (e.g. personally-owned devices, non-DoD networks, commercial websites, etc.).

3.9. Portable Electronic Devices (PEDs). The PIC will prohibit the use of any PED suspected of creating interference with systems on the aircraft (T-0).

3.9. (ACC) Portable Electronic Devices (PEDs). ACC aircrew may use PEDs IAW restrictions located on the ACC Stan/Eval EFB SharePoint.

3.9.1. **Non-Transmitting PEDs.** The following may be used at any time or altitude: portable voice recorders, hearing aids, heart pacemakers, electric shavers, calculators, watches, or any other portable electronic device authorized by the MAJCOM (in coordination with the MDS Systems Program Office (SPO)).

3.9.2. **Transmitting PEDs** . MAJCOM/A3 (in coordination with the MDS SPO) may authorize use of PEDs at any altitude with transmitters ON or OFF. In the absence of

MAJCOM guidance, the PIC may authorize use of PEDs at or above 10,000 ft. MSL with transmitter OFF (e.g. Airplane Mode).

3.9.3. **PED Connection to Aircraft.** MAJCOMs may authorize electrical connection of PEDs to aircraft power, data, or antennae with aircraft Program Manager approval. MAJCOMs will provide any applicable restrictions.

3.9.4. **PEDs used for Flight or Mission Duties.**

3.9.4.1. Information displayed on PEDs used to facilitate operation of the aircraft (e.g. Tech Orders, takeoff and landing data (TOLD)) will only be used as approved IAW AFI 11-215, *USAF Flight Manuals Program (FMP)* (T-1).

3.9.4.2. PEDs used to facilitate execution of the mission (e.g. portable electronic flight bags, portable Global Positioning System (GPS) units) will only be used as authorized by the MAJCOM. MAJCOMs (in coordination with the MDS SPO) will evaluate PEDs to minimize risks associated with mission completion, safety, and security.

3.9.4.3. MAJCOMs (in coordination with the MDS SPO), will publish guidance on use of personally-owned hardware or software.

3.9.5. **Photo and Video Recording Devices.** Pilot use of handheld photo or video recording devices is prohibited when that pilot is the only one with immediate access to the flight controls (T-3).

3.9.5.1. **(Added-ACC)** PICs are responsible to protect classified information from un-cleared passengers and orientation riders.

3.9.6. **Medical Equipment.** Normally, only medical equipment referenced in the aircraft flight manual, MDS-specific instruction, or listed in the Air Force Medical Logistics website is permitted. See **https://medlog.us.af.mil/**

3.9.7. **(Added-ACC)** ACC/A3 and ACCI 11-270, *Electronic Flight Bag Operations*, has authorized EFBs for use in all ACC, CAF NGB, CAF AFRC, and ACC-gained aircraft. For specific hardware, software, and security guidance refer to the ACC EFB SharePoint located within ACC/A3TV's SharePoint: **https://acc.eim.acc.hedc.af.mil/org/A3/A3T/A3TV/EFB/**. The aircraft that are approved for ADS-B IN operations are also listed on the same SharePoint site. For units outside of ACC, NGB, or AFRC, where ACC is the lead command (i.e. PACAF or USAFE), refer to MAJCOM guidance.

3.10. Aircraft Movement on the Ground. Comply with AFI 11-218, *Aircraft Operations and Movement on the Ground*, and locally published procedures (T-1).

3.10.1. **Clearances.** Obtain clearance from ATC before taxiing, proceeding onto a runway, takeoff or landing at an airport with an operating control tower (T-0). Precisely read back all taxi and hold short instructions (T-0). If a taxi route requires crossing any runway, hold short until obtaining specific clearance to cross each runway (T-0). Do not taxi across or onto the assigned runway without clearance from ATC (T-0).

3.10.2. **Surface Movement Guidance and Control System (SMGCS).** Obtain MAJCOM-directed training and certification before participating in SMGCS taxi operations (T-0). MAJCOMs shall publish MDS-specific guidance for aircrew required to operate at SMGCS locations in low visibility. See AFI 11-218 for further guidance.

3.10.3. **(Added-ACC)** Crewmembers that marshal aircraft will have completed AETC Computer Based Training (CBT) I6ADU00TCB0002 (Fixed Wing) or I6ADU00TCB0001 (Rotary Wing).

3.11. Crew at Stations. Crewmembers must occupy their assigned duty stations from takeoff to landing unless absence is normal in the performance of crew duties or in connection with physiological needs (T-0). Pilots shall not leave their duty station unless another qualified pilot establishes control of the aircraft (T-0).

3.11. (ACC) Crew at Stations. Crewmembers must be familiar with egress and ejection procedures for whatever seat they occupy.

3.12. Sterile Cockpit. In the absence of MAJCOM guidance, aircrew of fixed-wing aircraft shall minimize non-essential cockpit conversations and other extraneous activities which could interfere with flight duties when below 10,000 ft. MSL, during critical phases of flight, and during all taxi operations.

3.13. Inflight Reporting. See also AFI 10-206, *Operational Reporting*.

3.13.1. **Flight Safety Conditions.** Immediately report hazardous weather conditions, wake turbulence, volcanic activity, large concentrations of birds or wildlife on or near the airfield, or any other significant flight condition that may affect aviation safety to the appropriate controlling agency (T-1). See pilot report (PIREP) procedures in the *Flight Information Handbook* (FIH).

3.13.2. **Minimum or Emergency Fuel Advisory.** Declare "minimum fuel" or "emergency fuel" to the appropriate controlling agency when the aircraft may land at the intended destination with less than the MDS-specific minimum or emergency fuel reserves.

3.13.3. **Position Reports.** Report position as requested by ATC, host-nation procedures, or ICAO procedures (T-0). See IFR Supplement for position report format.

3.13.4. **Hazardous Laser Activity.** Report any hazardous laser activity. Reference AFI 11-301V4, *Aircrew Laser Eye Protection (ALEP),* for specific actions (T-1).

3.13.5. **Electromagnetic Interference.** Report any electromagnetic interference IAW Joint Spectrum Interference Resolution (JSIR) procedures in the FIH and AFI 10-707, *Spectrum Interference Resolution Program* (T-1).

3.14. Oxygen and Pressurization Requirements (N/A for UAS).

3.14.1. **Oxygen.** Ensure sufficient oxygen for the planned mission is available to all occupants before takeoff (T-0). Normally, aircrew will use supplemental oxygen any time the cabin altitude exceeds 10,000 ft. MSL.

3.14.2. **Unpressurized Operations.** When mission essential, aircrew trained IAW AFI 11-403, *Aerospace Physiological Training Program,* may operate aircraft unpressurized up to Flight Level (FL) 250 IAW MAJCOM guidance and the following restrictions (T-1):

3.14.2. **(ACC) Unpressurized Operations.** For any scheduled mission where cockpit pressure will exceed 18,000 feet Mean Sea Level (MSL), all aircrew members/occupants will pre-breathe 100% oxygen for at least 30 minutes prior to the cabin altitude exceeding 10,000 feet MSL. Any break in this pre-breathing cycle will require either starting the cycle again or removal of the affected individual from the flight.

3.14.2.1. **Without supplemental oxygen** :

3.14.2.1.1. Altitude is limited to 14,000 ft. MSL (T-0).

3.14.2.1.2. Flight time between 10,000 and 12,500 ft. MSL is unrestricted, but shall not exceed 1 hour if any portion of the flight is conducted in IMC, at night (with or without NVDs), while employing weapons, conducting airdrop, air-refueling, or if performing high-g maneuvers (T-1).

3.14.2.1.3. Flight time between 12,500 and 14,000 ft. MSL shall not exceed 30 minutes (T-0).

3.14.2.1.4. If any occupant is not trained IAW AFI 11-403, altitude and flight time are limited to 13,000 ft MSL and 3 hours, but shall not exceed the limits in **paragraphs 3.14.2.1.2** and **3.14.2.1.3** (T-1).

3.14.2.2. Supplemental oxygen must be used by all occupants between 14,000 ft. MSL and FL250. Do not exceed FL250 unless occupants are wearing functional pressure suits (see paragraph 3.14.7) (T-1).

3.14.3. **Pressurized Operations.** Pilots flying pressurized operations will normally maintain a cabin altitude below 10,000 ft. and comply with the supplemental oxygen requirements in **Table 3.1**. (T-1). If cabin altitude is between 10,000 ft. MSL and FL250, comply with **paragraph 3.14.2** (T-1).

3.14.3.1. **(Added-ACC)** The following oxygen restrictions apply to aircrew members:

3.14.3.1.1. **(Added-ACC)** When readily available oxygen is required, the troop oxygen system with troop masks installed, satisfies this requirement for aircraft so equipped.

Table 3.1. Oxygen Requirements for Pressurized Aircraft.

	Pilot(s)[1]	Cockpit Crew[2]	Other Flight Deck Crew	Cabin/Cargo Area Crew	Pax
10,000 ft. through FL 250	R	R	R	A	NA
Above FL 250 to FL 350	One I/One R	R	R	A	A
Above FL 350 to FL 410 (two pilots at controls)	I	R	R	A	A
Above FL 350 to FL 410 (one pilot at controls)	One O/One A	I	R	A	A
Above FL 410 to FL 450	One O/ One I	I	R	A	A
Above FL 450 to FL 500	One O/ One I	I	I	A	A
Above FL 500 to FL 600	G	G	G	G	G
Above FL 500 (Sustained)	S	S	S	S	S

NOTE 1: *Single-pilot aircraft must follow the most restrictive guidance in this table.*
NOTE 2: *Cockpit crew is defined as those crew positions with access to flight controls or responsibility for flight engineer panel, communication, or navigation systems.*

LEGEND:
A - Oxygen available. Carry or place portable oxygen units or extra oxygen outlets with masks throughout the cabin/cargo area so that any person has quick access to oxygen should a loss of pressurization occur
R - Oxygen readily available. A functioning system and mask shall be located within arm's reach, and the regulator must be set to 100 percent and ON (when regulator is adjustable).
I – Oxygen immediately available. Must wear helmets with an oxygen mask attached to one side, or have available an approved quick-don style mask properly adjusted and positioned. Regulators shall be set to 100 percent and ON.
O - Oxygen mask ON. Regulator ON and normal.
G - Wear a partial pressure suit. Suit must provide 70mm Hg of assisted positive pressure breathing for altitude (pressure breathing for altitude system/get-me-down scenario).
S-Wear a pressure suit. Suit must provide a total pressure (atmospheric plus suit differential) of at least 141 mm Hg to the head and neck with adequate body coverage to prevent edema and embolism**.**

3.14.4. **Procedures for Loss of Cabin Pressure.** Initiate an immediate descent to the lowest practical altitude, preferably below 18,000 ft. MSL. Do not allow cabin altitude to remain above FL250 unless occupants are wearing functional pressure suits. If any occupant lacks functioning oxygen equipment, descend to an altitude of 13,000 ft. MSL or less (terrain or fuel requirements permitting) and comply with **paragraph 3.14.2**.

3.14.4.1. If cabin altitude exceeds 18,000 ft. MSL following the unintended loss of cabin pressure, aircrew and passengers must be evaluated by a flight surgeon or other aviation medical authority prior to further flight (T-1). If cabin altitude cannot be determined, use the aircraft altitude at the time of the event. Report a loss of cabin pressurization IAW AFMAN 91-223.

3.14.5. **Decompression Sickness (DCS).** If any occupant exhibits DCS symptoms, descend as soon as practical and land at the nearest suitable installation where medical assistance can be obtained. Individuals suspected of DCS shall be administered and remain on 100% oxygen (using tight-fitting mask or equivalent) until evaluated by an aviation medical authority. Decompression sickness may occur up to 12 hours after landing. Aircrew will not fly after a DCS event without specific authorization from a flight surgeon (T-1).

3.14.5.1. **(Added-ACC)** To minimize the risk of developing decompression sickness (DCS) in pressurized aircraft operating at cabin altitudes of 21,000 - 25,000 feet without pressure suits, pilots will adhere to the time limits in **Table 3.2**. The time limit at or above 21,000 feet cabin altitude will be based on the highest cabin altitude flown during the sortie. Once the time limit is reached, pilots will land or descend to a cabin altitude of at or below 10,000 feet. Time spent at or below a cabin altitude of 10,000 feet resets the allowable duration at a one-for-one rate. Example: A pilot spends 20 minutes at a cabin altitude of 24,000 feet (45 min allowed per **Table 3.2**) and descends to a cabin altitude of 10,000 feet for 20 minutes, they regain 20 minutes of exposure time and may climb back to a cabin altitude of 21,000 feet or higher for an additional 45 minutes before having to descend

again. If any crewmember shows any signs of DCS, follow the guidance contained in paragraph **3.14.5**.

3.14.6. **Hypoxia.** If anyone on the aircraft experiences hypoxia symptoms, descend immediately to the lowest practical altitude and land at a suitable location to obtain medical assistance. Aircrew will not fly after a hypoxia event without specific authorization from a flight surgeon (T-1). For hypoxia symptoms caused by an On-Board Oxygen Generation System (OBOGS), follow MDS-specific guidance.

3.14.7. **High Altitude Operations.** Without functional pressure suits, maintain a cabin altitude below FL250 and adhere to the time limits in Table 3.2. (T-1). For high-altitude airdrop missions, use the oxygen requirements in AFI 11-409, *High Altitude Airdrop Mission Support Procedures*. If the aircraft lands between missions and the time on the ground equals or exceeds the time spent at or above a cabin altitude of FL210, the time of allowable duration can be reset to the maximum (T-1).

Table 3.2. Cabin Altitude Time Limits (DCS Prevention) (N/A for U-2 Operations).

Time (minutes)	Cabin Altitude (ft. MSL)
0	At or Above FL 250
45	24,000 – 24,999
70	23,000 – 23,999
120	22,000 – 22,999
200	21,000 – 21,999

3.15. Aircraft Lighting. Operate aircraft lighting according to the following guidance or IAW host-nation rules and theater SPINS (T-0):

3.15.1. **Position Lights.** Illuminate position lights (one per side minimum) between official sunset and sunrise (T-0); and,

3.15.1.1. When an engine is starting or running. Aircraft that do not have power available before start shall turn them on as soon as power is available (T-0); or,

3.15.1.2. While being towed, or when parked in an area likely to create a hazard, unless clearly illuminated by an outside source (T-0).

3.15.2. **Anti-collision or Strobe Lights.** If equipped, turn anti-collision or strobe lights on from just prior to engine start until engine shutdown (T-0).

3.15.2.1. Aircraft that do not have power available before engine start shall turn anti-collision or strobe lights on as soon as power is available (T-0).

3.15.2.2. Flashing lights may be switched off or reduced in intensity if they adversely affect the performance of duties, or subject an outside observer to harmful glare (T-0).

3.15.3. **Landing Lights.** If equipped, landing lights should be turned on when takeoff clearance is received, when commencing takeoff roll at an airport without an operating control

tower, or when operating below 10,000 ft. MSL within normal MDS-specific operating procedures. Unless safety or mission dictates, use landing lights when on an active runway (e.g., taxi exercise, taxiing onto a runway, or specific instructions).

3.15.4. **Reduced Aircraft Lighting.** MAJCOMs may authorize reduced or lights-out operations in restricted areas, warning areas, host-nation approved areas, or designated airfields. Designated airfields shall be documented in a Letter of Agreement (LOA) (T-1).

3.16. Airfield Lighting.

3.16.1. **Fixed-wing operations at night** :

3.16.1.1. Must comply with MDS-specific operating instructions, including comprehensive risk management (RM) measures (such as infrared (IR) lighting requirements, NVD usage, non-participating aircraft procedures, NOTAM issuance, weather and lunar illumination requirements and RM assessments) (T-2).

3.16.1.1.1. In the absence of MDS-specific operating instructions, do not conduct operations from a runway unless it is outlined with operable lighting or high-intensity runway reflective markers and is clearly discernible (T-2).

3.16.1.1.1. **(ACC)** E/RQ-4 may use unlighted runways at night.

3.16.1.2. Are restricted to military airfields or civilian airports with an appropriate LOA during non-contingency operations from unlighted runways or landing zones (or those using high-intensity runway reflective markers) (T-0).

3.16.2. Covert IR runway lighting used by qualified crews equipped with NVDs meets the intent of lighted landing surface.

3.16.3. **Extreme Latitudes** . In Alaska, areas located north of 60° North latitude, Antarctica, and areas located south of 60° South latitude, aircraft may be operated to unlighted airports during the period of civil twilight.

3.17. Right-of-Way. Each pilot must take whatever action is necessary to avoid collision, regardless of who has the right-of-way. The yielding aircraft must not pass over, under, abeam, or ahead of the other aircraft until well clear.

3.17.1. **Distress.** Aircraft in distress have the right-of-way over all other air traffic**.**

3.17.2. **Converging.** When converging at approximately the same altitude (except head-on or approximately so), the aircraft to the other's right has the right-of-way. Aircraft of different categories have the right-of-way in the following order of priority: balloons, gliders, aircraft towing or refueling other aircraft, airships, rotary- or fixed-wing aircraft.

3.17.3. **Approaching Head-On.** If aircraft are approaching each other head-on or approximately so, each shall alter course to the right (T-0).

3.17.4. **Overtaking Aircraft.** An overtaken aircraft has the right-of-way. The overtaking aircraft must alter course to the right (T-0).

3.17.5. **Landing.** An aircraft established on final approach has the right-of-way over other aircraft on the ground or in the air, except when two or more aircraft are approaching to land. In this case, the aircraft at the lower altitude has the right-of-way but it shall not use this advantage to cut in front of or overtake the other (T-0).

3.18. Detect and Avoid. When meteorological conditions permit, pilots under instrument flight rules (IFR) or visual flight rules (VFR), whether or not under radar control, are responsible for avoiding traffic, terrain/obstacles, and environmental hazards.

3.18.1. Standard IFR separation is provided between aircraft operating under IFR in controlled airspace. Within the National Airspace System (NAS), ATC provides traffic advisories on VFR aircraft on a time-permitting basis. Outside the NAS, consult ICAO and country-specific guidance outlined in the FCG and FLIP.

3.18.2. UAS without approved sense and avoid capabilities will be operated under specific arrangements with appropriate aviation authorities (e.g., FAA, host nation, or military control) (T-0).

3.18.3. **(Added-ACC)** Military Authority Assumes Responsibility for Separation of Aircraft (MARSA). FAA JO 7610.4S defines MARSA as "a condition whereby the military services involved assume responsibility for separation between participating military aircraft in the Air Traffic Control (ATC) system. It is used only for required IFR operations which are specified in letters of agreement or other appropriate FAA or military documents." Commanders must ensure pilots are aware of MARSA applicable agreements contained in Letters of Agreement with ATC agencies. Pilots cannot arbitrarily declare MARSA. See AFI 13-201 for additional procedures.

3.19. Proximity of Aircraft. Do not allow the aircraft to be flown so close to another that it creates a collision hazard (T-0). Use 500 ft of separation as an approximate guide except for:

3.19.1. Authorized formation flights.

3.19.2. Emergency situations requiring assistance from another aircraft. If an emergency requires visual checks of an aircraft in distress, exercise extreme care to ensure this action does not increase the overall hazard. The capabilities of the distressed aircraft and the intentions of the crews involved must be considered before operating near another aircraft in flight.

3.19.3. MAJCOM-approved maneuvers in which participants are aware of the nature of the maneuver and qualified to conduct it safely (e.g. interceptor visual identification training).

3.20. Dropping Parachutists, Stores, or Other Objects. Do not allow objects to be dropped except in an emergency or for mission accomplishment (T-2). Report any accidental loss of equipment, aircraft parts, or cargo IAW AFI 10-206 and AFMAN 91-223.

3.21. Fuel Jettison. Do not jettison fuel except in an emergency or when required for mission accomplishment (T-2). When jettisoning fuel and circumstances permit, provide the appropriate ATC or flight service facility with intentions, altitude, location, and completion time. Report any jettisoning of fuel IAW AFI 10-206.

3.22. Radio, Laser, and Other Electromagnetic Emitter Restrictions. Equipment which transmits radio, laser, or other energy will only be operated for the intended purpose and in the authorized manner to prevent unintentional interference, damage, or injury (T-0).

3.23. Communication, Navigation, and Surveillance Equipment. Operate equipment as authorized by the MAJCOM (in coordination with the MDS SPO). MAJCOMs will establish tactical operations guidance. When operating in controlled airspace under IFR, immediately report to ATC the loss or impairment of navigational, air-to-ground communications, or surveillance capability IAW the FIH (T-0).

3.23. (ACC) Communication, Navigation, and Surveillance Equipment. ACC aircraft are authorized to operate communication, navigation and surveillance equipment during all operations IAW AFMAN 11-2MDSV3, AFMAN 11-2MDSV3 Supplement, and MDS Specific AFTTPs.

3.23.1. **Transponders.** Operate the transponder IAW ATC instructions, host nation procedures, MAJCOM directives, and theater SPINS. In the NAS, transponders will be operated in controlled airspace, including Mode C if installed, on the appropriate code or as assigned by ATC (T-0). Prior to aircraft movement at civil airports, transponders will be "ON" in the altitude reporting mode (T-0). At all other airports, unless local procedures dictate otherwise, transponders should be turned to the "ON" or normal altitude reporting mode.

3.23.1.1. **Mode S Flight ID** . Prior to each flight, ensure the Mode S Flight ID matches the call sign entered exactly on the flight plan with no embedded spaces, dashes, extra characters, or added zeros (T-0). When the flight plan call sign is less than seven characters, place blank spaces only at the end.

3.23.1.2. **Mode S Address** . Prior to each flight, ensure the Mode S address is entered correctly. MAJCOMs will manage assigned dynamic addresses to ensure no two aircraft are airborne with the same address.

3.23.1.3. **Mode 4/5** . If required, Mode 4/5 operations are outlined in the Flight Information Handbook (See MODE 4/5 in glossary).

3.23.2. **Traffic Collision Avoidance System (TCAS).** Aircraft equipped with TCAS shall operate in the TCAS mode that provides both Traffic Alerts (TAs) and Resolution Advisories (RAs), unless otherwise dictated by the aircraft manual, formation flight requirements, MAJCOM guidance, mission requirements, or host-nation agreements (T-1).

3.23.2.1. **Response to TCAS Alerts** . Respond to all RAs regardless of ATC instructions, right-of-way rules, cloud clearance requirements, or other VFR/IFR flight rules, as directed by TCAS unless doing so would jeopardize the safe operation of the aircraft (e.g., descent into obstacles) (T-1).

3.23.2.1.1. Do not deviate from an assigned ATC clearance based solely on TA information (T-1). Attempt to attain visual contact and maintain safe separation.

3.23.2.1.2. In the event of an RA, alter the flight path only to the extent necessary to comply with the RA (T-1).

3.23.2.1.3. After deviating from an ATC clearance in response to an RA, notify ATC of the deviation as soon as practical and promptly return to the current ATC clearance when the traffic conflict is resolved or obtain a new clearance (T-0).

3.23.3. **Terrain Awareness and Warning Systems (TAWS).** Comply with appropriate flight manual procedures and MAJCOM guidance upon receipt of a Ground Proximity Warning System (GPWS)/TAWS/Enhanced GPWS (EGPWS)/Ground Collision Avoidance System (GCAS) warning. During Visual Meteorological Conditions (VMC) flight, terrain warnings do not need to be followed if the pilot can verify the warning is false by visual contact with terrain or obstacles.

3.23.4. **Global Positioning System (GPS) Equipment.**

3.23.4.1. MAJCOMs (in coordination with the MDS SPO), will determine if GPS is approved as the primary means of navigation and provide guidance for its use. If GPS is not approved as primary, ensure the approved primary means of navigation (e.g., VOR, TAC, etc.) is operational and monitored (T-0).

3.23.4.1. **(ACC)** ACC aircrew are authorized to use integrated GPS equipment as a primary means of navigations IAW AFI or AFMAN 11-2MDSV3.

3.23.4.1.1. **(Added-ACC)** GPS as Primary Means of Navigation in Remote/Oceanic Areas. ACC aircraft and aircraft under ACC oversight are approved to use GPS as a primary means of navigation provided the capabilities are listed in 11-2 MDS Specific, Volume 3 or aircraft T.Os.

3.23.4.1.2. **(Added-ACC)** ACC aircraft and aircraft under ACC oversight are approved to use VNAV systems for VFR and IFR operations provided the capabilities are listed in AFI/AFMAN 11-2 MDS, Volume 3, and/or aircraft T.O.s.

3.23.4.1.3. **(Added-ACC)** Barometric Vertical Navigation (Baro-VNAV). ACC aircraft and aircraft under ACC oversight are approved to use barometric VNAV (BARO-VNAV) systems for instrument approaches provided the capabilities are listed in 11-2 MDS Specific, Volume 3 or aircraft T.Os.

3.23.4.2. **GPS Standard Position Service (SPS) and Precise Position Service (PPS)** . Follow MAJCOM or SPINS guidance on use of SPS/PPS.

3.23.4.2. **(ACC) [N/A OC-135]** Aircrew will employ properly keyed GPS receivers that make maximum use of encrypted PPS signals for both military and civil operations. Aircrew will also avoid the use of receiver modes of operation, such as "Mixed mode" or "Precise Position Service (PPS) lockout," which permit the receiver free use of unencrypted GPS signals.

3.23.4.3. Receiver Autonomous Integrity Monitoring (RAIM) is required unless integrity is ensured by other means approved by the MAJCOM (T-0).

3.23.4.3.1. **Active RAIM** . If RAIM is not available, actively monitor an alternate means of navigation and inform ATC of any degraded capability (T-0).

3.23.4.3.2. **Predictive RAIM (P-RAIM)** . Check P-RAIM prior to departure when possible (T-0). If RAIM is predicted to be unavailable for more than five minutes along the route of flight, the flight must rely on other approved equipment, be rerouted, or delayed (T-0). Not required if Wide-Area Augmentation System (WAAS) enabled and flight is in WAAS coverage area (T-0).

3.23.5. **RNAV Equipment other than GPS.** (eLORAN, Inertial, Stellar, Doppler, Blended, Hybrid, Tightly-Coupled, EGI, DME/DME, GNSS other than GPS, etc.). MAJCOMs (in coordination with the MDS SPO), will determine if RNAV equipment other than GPS is approved as the primary means of navigation and provide guidance for its use. If not approved as primary, ensure the approved primary means of navigation (e.g., VOR, TAC, etc.) is operational and monitored (T-0).

3.23.5. **(ACC)** ACC aircrew are authorized the use of RNAV Equipment other than GPS as a primary means of navigation IAW AFMAN 11-2MDSV3, and aircraft T.O.s.

3.23.6. **Carry-On Equipment.** Use carry-on communication, navigation, and surveillance equipment as authorized by the MAJCOM (in coordination with the MDS SPO). MAJCOMs will publish guidance and provide training on acceptable use, limitations, and hazards of carry-on equipment. See also paragraph 3.9.

3.23.6. **(ACC)** ACC aircrew are authorized the use of carry-on equipment IAW AFMAN 11-2MDSV3, and aircraft T.O.s.

3.23.6.1. **(Added-ACC)** Portable GPS Units (PGUs). PGUs include commercial hand-held GPS receivers, military precision lightweight GPS receivers (PLGRs), and PLGRs coupled with a laptop computer that incorporates moving map displays. They are intended to be used in aircraft as situational awareness tools only. PGUs are authorized for use with the following restrictions: PGUs shall not be used for IFR navigation or as a primary flight reference and will not be used as a substitute for any required flight equipment.

3.24. Formation Flights (Including Air Refueling). Accomplish formation flights only as authorized by the MAJCOM.

3.24. (ACC) Formation Flights (Including Air Refueling). ACC aircrew are authorized for formation flights IAW AFMAN 11-2MDSV3, local guidance, NATO ATP-3.3.4.2., *Air-to-Air Refueling*, and MDS-specific AFTTPs.

3.24.1. **Formation Briefing** . Formation flight leads will brief formation flight operations to all participants in accordance with MAJCOM-approved guidance (T-0).

3.24.1. **(ACC)** ACC formation flight leads will brief aircrew formation flights IAW AFMAN 11-2MDSV3, local guidance, NATO ATP-3.3.4.2. and MDS-specific AFTTPs.

3.24.2. **Formation in Reduced Vertical Separation Minimum (RVSM) Airspace within the NAS.** Formation flights may operate in RVSM airspace if all participating aircraft are RVSM compliant or approved by ATC (T-0).

3.24.3. **Aircraft Lighting** . MAJCOMs may authorize formation flights to vary lighting configuration according to the aircraft type and mission requirement. The MAJCOM must provide guidance on this type of operation and ensure the guidance provides an equivalent level of visual identification as a single aircraft.

3.24.4. **Transponder Operations** .

3.24.4.1. Only one aircraft (normally the lead) of a standard formation should squawk (T-0).

3.24.4.2. Unless otherwise directed, receivers will not squawk when less than 3 nautical miles (NM) from the tanker (T-0).

3.24.4.3. Unless otherwise directed by ATC, all aircraft within a non-standard formation flight will squawk until established within the assigned altitude block and closed to the proper enroute interval (T-0). When aircraft interval exceeds 3 NM, both the formation leader and the last aircraft will squawk (T-0).

3.24.5. **Traffic Collision Avoidance System (TCAS) Operations** .

3.24.5.1. Formation leads (and last aircraft, when formation length exceeds 3 NM) shall operate in TA mode unless otherwise required by ATC, host-nation agreement or specified in the MDS-specific guidance (T-0).

3.24.5.2. During refueling operations, the tanker aircraft will operate in TA mode (T-0).

3.24.6. Non-standard Formations. Non-standard formation flights may be conducted:

3.24.6.1. When approved by ATC;

3.24.6.2. Operating under VFR in VMC;

3.24.6.3. Operating within an authorized Altitude Reservation (ALTRV);

3.24.6.4. Operating under the provisions of a LOA; or,

3.24.6.5. Operating in airspace specifically designated for a special activity.

3.24.6.6. **(Added-ACC)** The formation leader shall notify ATC upon initial contact and entering each new sector that flight operations are being conducted in a non-standard formation. Advise ATC of the separation and spacing being employed.

3.25. Large Scale Exercises. MAJCOMs will conduct large-scale exercises in permanent or temporary Special Use Airspace (SUA) established according to FAA Joint Order (JO) 7400.2, *Procedures for Handling Airspace Matters*, and FAA JO 7610.4, *Special Operation*. When MAJCOMs approve large-scale exercises or short-term special missions they will ensure information on approved activities is available to the non-participating flying public and coordinate these operations with:

3.25.1. Affected non-participating military flying units;

3.25.2. Affected FAA Air Route Traffic Control Center (ARTCC);

3.25.3. Affected FAA regions through the Air Force representative (AFREP); and,

3.25.4. Other agencies, as appropriate.

3.26. Aerobatics and Air Combat Tactics. Aerobatics, air combat tactics and air-to-ground tactics which involve aerobatic type maneuvering must be performed in SUA, ATC-Assigned Airspace (ATCAA), military training routes (MTRs) or host-nation approved airspace IAW the guidelines in AFI 11-214, *Air Operations Rules and Procedures* (T-0). Aircraft deployed or based at overseas locations will operate IAW applicable host-nation agreements or ICAO SARPs (T-0). If the aircraft operating requirements (altitude requirements, maximum airspeeds, dropping of objects, etc.) dictated in the host-nation agreement are less restrictive than USAF/MAJCOM guidance, the most restrictive guidance shall be used (T-1).

3.26.1. **(Added-ACC)** The minimum altitude for performing aerobatics and Air Combat Training (ACT) is 5,000 feet Above Ground Level (AGL) or as stated in AFI/AFMAN 11-2 MDS-Specific, Volume 3, whichever is higher. Aerobatic maneuvers are authorized below 5,000 feet AGL to the extent necessary to accomplish the low altitude training events authorized in AFI/AFMAN 11-2 MDS-Specific, Volume 1.

3.27. Temporary Flight Restriction (TFR) Airspace. Aircraft will not operate in TFR airspace unless authorized (T-0).

3.28. Uncontrolled Field Procedures. Use the runway favored by the winds unless safety, air traffic considerations, or mission accomplishment makes another option more suitable (T-0). Announce your activities on the appropriate frequencies (T-0). UAS operations are prohibited at uncontrolled fields when other traffic is present (T-2).

3.28. (ACC) Uncontrolled Field Procedures. In addition to the requirements in AFI 13-204V3, *Airfield Operations Procedures and Programs*, OG/CCs are responsible for publishing procedures to operate at an uncontrolled field. These procedures may be published in a base Operating Instruction (OI), base flying regulation (i.e. In-Flight Guide), base specific 11-250, etc..

3.28.1. **(Added-ACC)** Hours of operation.

3.28.2. **(Added-ACC)** Type of aircraft authorized/involved.

3.28.3. **(Added-ACC)** Designated runways/operating areas authorized for uncontrolled operations.

3.28.4. **(Added-ACC)** Published procedures in appropriate Flight Information Publications.

3.28.5. **(Added-ACC)** Common operating frequency.

3.28.6. **(Added-ACC)** Procedures to record common operating frequency.

3.28.7. **(Added-ACC)** Procedures to de-conflict traffic patterns with all airports within 10NM.

3.28.8. **(Added-ACC)** Establishing a responsible agent(s) (Operations Duty Officer, etc.) for all organizations conducting uncontrolled operations.

3.28.8.1. **(Added-ACC)** Responsible agent(s) must be present during uncontrolled operations.

3.28.8.2. **(Added-ACC)** Responsibilities and authority of responsible agent(s) must be clearly defined.

3.28.8.3. **(Added-ACC)** A formal training plan/program must be established for training responsible agent(s).

3.28.9. **(Added-ACC)** Procedures for scheduling uncontrolled operations.

3.28.10. **(Added-ACC)** Procedures for briefing users on airfield conditions (construction, etc.).

3.28.11. **(Added-ACC)** Procedures for reporting and disseminating emergency information affecting airfield conditions (i.e. conditions created by uncontrolled operations that affect operations when the airfield re-opens).

3.28.12. **(Added-ACC)** Procedures and requirements for weather briefings.

3.28.13. **(Added-ACC)** Procedures to educate vehicle operators on uncontrolled airfield operations and runway access.

3.28.14. **(Added-ACC)** Agency responsible for conducting runway/airfield checks prior to uncontrolled operations.

3.28.15. **(Added-ACC)** Procedures to inform base agencies of commencement/termination of uncontrolled operations.

3.29. Obstacle Clearance Responsibility. Pilots are never relieved of the responsibility for terrain and obstacle avoidance. The radio call "Radar Contact" only means the aircraft has been identified on radar. Responsibility is shared between pilot and controller only after navigational guidance is issued.

3.30. Participating in Aerial Events. Ensure compliance with AFI 11-209 when participating in aerial events, demonstrations, and static displays.

3.31. Simulated Instrument Flight.

3.31.1. For non-instrument qualified pilots, a safety observer who is able to clear outside at all times should accompany the flight either as a crewmember or in a chase aircraft. If a chase aircraft is used, maintain continuous visual contact and two-way communications between aircraft. A safety observer is defined as a current and qualified instrument pilot or a fighter weapons systems operator (or other MAJCOM-designated aircrew member) with access to a set of flight controls.

3.31.1.1. **(Added-ACC)** For Companion Trainer Program aircraft, the safety observer must be a pilot qualified in that particular aircraft.

3.31.2. **Vision Restricting Devices** . MAJCOMs must approve the use of vision restricting devices and provide specific approval for use during takeoffs and landings. Vision restricting devices will not be used without a safety observer (T-0).

3.31.2. **(ACC) Vision Restricting Devices.** Hooded simulated instrument flight is permitted when the pilot performing simulated instrument flight is occupying the rear seat in aircraft with tandem cockpits. When pilots use a vision-restricting device, the safety observer must be an instrument qualified pilot, have met landing currency requirements in the aircraft, have full view of the flight instruments and access to the flight controls.

3.31.2.1. Maintain at least 2,000 ft. of obstruction clearance when using vision restricting devices if the safety observer is in a chase aircraft, or not qualified as a pilot, or does not have full view of the flight instruments and access to the flight controls (T-2).

3.31.3. When not on an IFR flight plan, the aircraft must be equipped with a functional two-way radio and have the airport environment in sight when established on the final segment of an approach (T-0).

3.32. Simulated Emergency Flight Procedures.

3.32.1. Terminate simulated emergency training if an actual emergency occurs.

3.32.2. MAJCOMs must provide guidance when an instructor pilot or flight examiner does not have immediate access to the aircraft controls.

3.32.3. Passengers will not be onboard unless specifically approved by MAJCOM and with PIC concurrence (N/A for UAS).

3.32.4. Single-pilot aircraft require day VMC (including civil twilight)(N/A for UAS) (T-2).

3.32.5. Multi-pilot aircraft in day IMC require weather conditions at or above published circling minimums for the approach to be flown (N/A for UAS) (T-2).

3.32.6. Multi-pilot aircraft at night require weather conditions at or above 1,000 ft. ceiling and 2 SM visibility or circling minimums, whichever is higher (N/A for UAS) (T-2).

3.32.7. **Simulated Flameout, Forced Landing, or Emergency Landing Patterns (SFO/ELP)** . At controlled fields where SFO/ELP maneuvers are conducted, the facility air traffic manager shall issue an LOA with the appropriate military authority and adjacent facilities as required. The LOA shall conform to FAA Joint Order (FAA JO) 7610.4. (T-0).

3.32.7.1. MAJCOMs must provide guidance for SFO/ELP approaches when the T.O.s do not provide specific guidance; the approaches do not conform to the T.O. guidance; the approaches have not been coordinated with the ATC responsible for the airspace; or the airport/landing area does not have a prepared runway surface, an active tower/ Runway Supervisory Unit (RSU), enough runway, or proper crash/rescue equipment.

3.32.7.1.1. **(Added-ACC)** SFOs without an active control tower or runway supervisory unit are permitted with the following provision:

3.32.7.1.1.1. **(Added-ACC)** IAW JO 7610.4U, an appropriate Memorandum of Understanding (or Letter of Agreement) must be in place and state the means by which SFO traffic is separated from other traffic and which enforces other provisions of JO 7610.4U.

3.32.7.1.1.2. **(Added-ACC)** A copy of the MOU/LOA must be provided to ACC/A3TV (NGB A2/3/6/0 for ANG units) prior to first use.

3.32.8. **(Added-ACC)** Simulated compound emergency procedures are prohibited in Companion Trainer Program aircraft.

3.32.9. **(Added-ACC)** Actual engine shutdown is not permitted for simulated emergencies.

3.33. Vertical-Lift Operations. For this instruction, tilt-rotor aircraft in vertical-flight mode will follow helicopter guidance. MAJCOMs will provide guidance on determining phase-of-flight for aircraft capable of transition to/from vertical flight.

3.34. (Added-ACC) Functional Check Flight Program. [N/A RC/OC/WC/TC-135, E-3, and E-8] The OG/CC and MXG/CC are responsible for the management and administration of the wing FCF program IAW AFI 21-101, *Aircraft and Equipment Maintenance Management*, the corresponding ACC supplement and this supplement. Group commanders, officers in charge of FCFs and unit quality assurance (QA) FCF managers are responsible for ensuring compliance with these procedures. In addition to the mentioned references, the following guidance applies:

3.34.1. **(Added-ACC)** OG/CCs will:

3.34.1.1. **(Added-ACC)** Designate a unit officer in charge of FCFs.

3.34.1.2. **(Added-ACC)** Establish a unit FCF checkout and continuation training program.

3.34.1.3. **(Added-ACC)** Review qualifications of all assigned and attached aircrew members and select highly qualified individuals as FCF flight crews.

3.34.2. **(Added-ACC)** Officer in charge of FCFs:

3.34.2.1. **(Added-ACC)** Is a current and qualified pilot or WSO, is qualified to conduct FCFs, and can serve as FCF checkout pilot. If the OIC is a WSO, then the deputy OIC must be a qualified pilot.

3.34.2.2. **(Added-ACC)** Ensures standard FCF profiles and associated procedures are established for each type of assigned aircraft. Ensures tailored profiles are developed when specific procedures from the standard profile are not required to verify functional ability of the system causing the FCF.

3.34.2.3. **(Added-ACC)** Serves as a liaison between maintenance and operations in areas of flying safety, standardization and operational maintenance priorities with respect to the FCF program.

3.34.2.4. **(Added-ACC)** Ensures the information file for briefing FCF flight crews is maintained.

3.34.2.4.1. **(Added-ACC)** Ensures mission profile for each type of assigned aircraft, consisting of checks to be accomplished is presented in consecutive order.

3.34.2.4.2. **(Added-ACC)** Ensures unit directives concerning FCF procedures are adhered to.

3.34.2.4.3. **(Added-ACC)** A FCF checklist for each type of assigned aircraft.

3.34.2.4.4. **(Added-ACC)** Map of local FCF area or route of flight.

3.34.2.4.5. **(Added-ACC)** List of authorized FCF crew members signed by the appropriate squadron commander. Retain certification letters in aircrew training folder and document on letter of Xs.

3.34.2.4.6. **(Added-ACC)** Copy of TO 1-1-300, *Maintenance Operational Checks and Check Flights*.

3.34.2.5. **(Added-ACC)** Oversees overall management and use of FCF flight crews.

3.34.3. **(Added-ACC)** The QA FCF manager will:

3.34.3.1. **(Added-ACC)** Coordinate with the OIC of FCFs to ensure standard FCF profiles and associated procedures are established for each type of assigned aircraft. When a full FCF profile is not required, coordinate a tailored profile by eliminating procedures from the standard profile not required to verify functional ability of the system causing the FCF. **(T-3).**

3.34.3.2. **(Added-ACC)** Notify the OIC for FCFs or the flying squadron when there is a requirement for FCF crews. **(T-3).**

3.34.3.3. **(Added-ACC)** Ensure that each FCF crew is briefed on documentation requirements for the AFTO Form 781 series and the -6 T.O. FCF checklists, when applicable. **(T-3).**

3.34.4. **(Added-ACC)** Fly FCFs under IFR control to the maximum extent possible. **(T-3).**

3.34.5. **(Added-ACC)** Unit Procedures. Local FCF procedures not covered in the appropriate AFI/AFMAN 11-2MDS-Specific Volume 3 will be published in the AFI/AFMAN 11-2MDS-Specific Volume 3 supplement, or in a separate FCF operating instruction, to include, as a minimum:

3.34.5.1. **(Added-ACC)** Any applicable T.O. 1A-MDS Specific-6, Scheduled Inspection and Maintenance Requirements or restrictions.

3.34.5.2. **(Added-ACC)** Any expanded aircrew preflight checks required for FCFs.

3.34.5.3. **(Added-ACC)** FCF specific ground procedures (compass swing, taxi check).

3.34.5.4. **(Added-ACC)** Any FCF specific radio procedures.

3.34.5.5. **(Added-ACC)** Any FCF specific radar control procedures.

3.34.5.6. **(Added-ACC)** Any FCF specific procedures to enter test area.

3.34.5.7. **(Added-ACC)** Any FCF specific debriefing procedures.

3.34.6. **(Added-ACC)** Waivers. OG/CCs may authorize temporary waivers for aircrew qualification, for a specific flight, when operational requirements dictate. Permanent waivers, not otherwise granted in this publication, require ACC/A3T (AFRC/A3D for AFRC units) approval.

3.35. (Added-ACC) Operational Check Flight (OCF) Program. OCFs will be flown when operational checks are listed as required by MDS Specific-1 and/or the -2 series tech order documents.

3.35.1. **(Added-ACC)** The OG/CC is responsible for the management and administration of the wing OCF program.

3.35.2. **(Added-ACC)** OCFs will be kept to a minimum and are not used to replace FCF requirements.

3.35.3. **(Added-ACC)** Local OCF procedures not covered in the appropriate AFI/AFMAN 11-2MDS-Specific Volume 3 will be published in the MDS Vol 3 supplement, or in a supplement to this publication.

3.36. (Added-ACC) RM Program. RM is a shared responsibility between commanders, supervisors, and aircrew. Incorporate RM into daily flight operations to identify risks associated with the mission, identify areas of risk mitigation, and to determine the appropriate authority level required to release the mission.

3.36.1. **(Added-ACC)** Ensure a risk assessment is completed for each aircraft/formation and its pilot/crew prior to being released for the mission.

3.36.2. **(Added-ACC)** Tailor the RM process to the MDS, mission, and other unit specific elements. RM process guidance can be found in AFPAM 90-803, *Risk Management (RM) Guidelines and Tools*, which provides definitions, guidelines, procedures and tools for RM integration and execution. Examples of existing RM assessment tools (worksheets, briefing guides, etc.) are located on the ACC/SE website.

Chapter 4

PREFLIGHT

4.1. Flight Authorization. Flights in USAF aircraft will be authorized and documented IAW AFI 11-401 and MAJCOM guidance (T-1).

4.1.1. **(Added-ACC) [N/A AFRC/ANG]** Airspace Letters of Agreement. Units will publish the file location of all Letters of Agreement (LOA) and Certificates of Authorization (COA) in their local 11-250 documents. LOA and COA guidance in the 11-250 will also address the mandatory review process and frequency thereof.

4.2. Pilot in Command. The PIC must be current and qualified in the aircraft to be flown or under the supervision of a current and qualified instructor pilot (to include supervision from a formation position) (T-0). If any portion of the flight will be conducted in IMC or under IFR, the PIC must hold a current instrument qualification (T-0). **Exception**: Student pilots enrolled in Undergraduate Flying Training courses, Introduction to Fighter Fundamentals, and Pilot Instructor Training may act as PIC for syllabus-directed solo flights IAW FAA JO 7610.4 (T-0).

4.3. Approval Authority. The individual(s) designated on the Flight Authorization as the PIC is the approval authority for the flight (T-1).

4.3.1. Flying unit commanders must approve fixed-wing aircraft operations from other than established landing surfaces (e.g. highways, pastures) (T-2).

4.4. Flight Accountability. To ensure flight accountability, file a flight plan IAW GP or provide the intended route of flight to a C2 mission agency (T-2). If filing by electronic or telephonic means and departing from a DoD airfield, provide base operations with a copy of the flight plan for flight following. Use DD Form 1801, *DoD International Flight Plan*, if any portion of the flight requires RNAV. If unable to file on the ground, once airborne, file a flight plan with a Flight Service Station (FSS) or ATC facility as soon as practicable while staying clear of restricted airspace and flying VFR in controlled airspace.

4.5. Mission Planning Requirements.

4.5.1. Plan missions to the maximum extent possible. Obtain current and relevant information at all possible opportunities, including:

4.5.1.1. Weather observations and forecasts (T-0). See also **paragraph 4.12**;

4.5.1.1.1. **(Added-ACC)** Wind and Sea State Restrictions for Ejection Seat Aircraft. Normal flying training operations will not be conducted when surface winds along the intended route of flight exceed 35 knots steady state over land (25 knots over water) or when the Significant Wave Height exceeds 10 feet. **(T-3).** This is not intended to restrict point-to-point operations (e.g., ocean crossings) when only a small portion of the route is affected. If possible, alter the mission planned route to avoid the affected area.

4.5.1.2. NOTAMs, to include SUA and TFRs (T-0);

4.5.1.3. Airfield Suitability and Restrictions Report (ASRR) information if required by MAJCOM;

4.5.1.3.1. **(Added-ACC)** ACC aircraft or aircraft under ACC oversight that are specifically mentioned by MDS in the ASRR will follow guidance contained in these documents. **(T-3).** The Giant Report is available on the Global Decision Support System (GDSS2).

4.5.1.3.2. **(Added-ACC)** Crews will review all airfield qualification information for unfamiliar airfields. Information may be accessed via Jeppesen, NGA or, if available, via EFB. Ops Group Commander will provide guidance concerning Q-code restrictions**.** If the airfield is not listed in the airfield qualification program, review all applicable DoD approach and FLIP information about the field. If the airfield is listed but internet access is not available at your site, make every effort to gain the information from another source, or pursue waivers as applicable in the ASRR.

4.5.1.3.3. **(Added-ACC)** Units requiring airfield information not available at the Jeppesen website, forward requests through ACC/A3TV (AFRC/A3D) to AFFSA.

4.5.1.3.4. **(Added-ACC)** SDP and Non-USG chart services (or other approved private vendor) information are available at commercial websites. Contact AMC Airfield Suitability office (DSN 779-3112 or **airfield.helpdesk@us.af.mil**) for access to Giant Reports via GDSS2. Individual aircrew should request usernames and passwords for website access to **www.jeppesen.com**.

4.5.1.3.5. **(Added-ACC)** For aircraft without tail hooks, runway and taxiway requirements are contained in **Table 4.1** or IAW AFI/AFMAN 11-2 MDS-Specific Volume 3, whichever is greater.

4.5.1.4. FLIP, to include appropriate navigational and plotting charts with current vertical obstructions (T-0);

4.5.1.4. **(ACC)** Pilots-in-command (PICs) are responsible for the portion of flight planning that ensures obstacle clearance along the route of flight. For portions of flight above 1000’ AGL, the PIC must ensure that the crewmember at each set of flight controls has access to a visual depiction of an ACC-approved obstruction database. For portions of flight at or below 1000’ AGL, the only ACC-approved obstruction database is produced by the National GeoSpatial-Intelligence Agency (NGA), available at **https://www.geo.nga.mil/products/aero/**. PICs are also responsible for understanding the limitations of their aircraft systems in displaying information from approved databases.

4.5.1.5. Fuel requirements (T-0);

4.5.1.6. Bird advisories and hazard information (T-2);

4.5.1.7. Special Departure Procedures (SDP) if authorized by MAJCOM;

4.5.1.8. As applicable: P-RAIM, Space Based Augmentation System (SBAS) coverage and NOTAMs, and air traffic management Service Availability (e.g. Automatic Dependent Surveillance-Broadcast (ADS-B) services) (T-0);

4.5.1.9. Aircraft T.O. (T-0);

4.5.1.10. MDS-specific, Volume 3 (T-1); and,

4.5.1.11. Applicable MAJCOM/COCOM guidance (e.g. flight crew information files (FCIFs) and flight crew bulletins (FCBs)).

4.5.1.12. **(Added-ACC)** Takeoff and landing limitations, including low-visibility operations. For all ACC Fighter aircraft or Fighter aircraft under ACC oversight, the following apply:

4.5.1.12.1. **(Added-ACC)** Additional weather minimums in **Table 7.6** apply.

4.5.1.12.2. **(Added-ACC)** Minimum runway width for takeoff and landing is 74 feet.

4.5.1.12.3. **(Added-ACC)** Tail hook equipped aircraft will take-off towards a compatible arresting system when the minimum go or continuation speed exceeds maximum abort speed for dual-engine aircraft or takeoff speed exceeds refusal speed for single-engine aircraft. **(T-3).**

4.5.1.12.4. **(Added-ACC)** Except in an emergency, ACC Fighter aircraft or Fighter aircraft under ACC oversight will not land at a preplanned destination when computed landing roll (to include wet, icy or tailwind conditions) exceeds 80% of the available runway, regardless of arresting gear availability. **(T-3).**

4.5.1.12.5. **(Added-ACC)** Tail hook-equipped aircraft will not use airfields with less than 8,000 feet of runway length and without a compatible arresting gear system (defined as any cable/arresting gear on the departure end or in the overrun capable of stopping the aircraft) as preplanned destinations or alternate airfields. **(T-3).**

4.5.1.12.6. **(Added-ACC)** Aircraft will not take off or land over an approach-end cable reported as slack or loose. **(T-3).**

Table 4.1. (Added-ACC) Airfield Parameters.

AIRCRAFT	MINIMUM RUNWAY LENGTH (excluding overrun)	MINIMUM RUNWAY WIDTH	MINIMUM TAXIWAY WIDTH
E-8	7,000'	135'	75'
A-10	5,000'	75'	50'

4.5.2. **International Flights.** Comply with international procedures in FLIP GP, Area Planning (AP), ICAO guidance, host-nation procedures, and the FCG (T-0).

4.5.2.1. On all departures to or from a foreign location, use extra vigilance when checking passenger manifest, cargo, and likely areas aboard the aircraft where drugs, contraband, stowaways, or other illegal substances may be concealed.

4.5.2.2. Immediately report any suspected customs, agriculture, or immigration violations to the proper authorities.

4.6. Off-Station Training. Flying unit commanders will ensure off-station training is planned to achieve valid training requirements, presents a positive view of the USAF, and does not create an appearance of government waste or abuse (T-2).

4.7. Military and Joint-Use Airports. Aircrew may file to and land at US military and Joint-Use (i.e. MIL/CIV) fields.

4.8. Civil Airports.

4.8.1. MAJCOMs may authorize filing to or landing at civil airfields. Use of civil facilities not governed by agreement or law may result in landing fees or use fees charged to the pilot or the military unit.

4.8.2. **"P-coded" Civil Airports** (as listed in the IFR Supplement). Aircrew may file to or land USAF aircraft at US civil public airports when:

4.8.2.1. In an emergency;

4.8.2.2. Flying a helicopter or C-coded aircraft (e.g. C-130, C-12, C-40);

4.8.2.3. Necessary in the recovery of active air defense interceptor aircraft;

4.8.2.4. An alternate is required and no other suitable airport is available;

4.8.2.5. The wing commander or higher authority approves the flight and the airport manager grants permission in advance; or,

4.8.2.5. **(ACC)** ACC aircrews are authorized to file to and land at "P-Coded" civil airfields IAW **4.8.2**. Operations group commanders will publish guidance on how their units will confirm compliance with **4.8.2**., **4.8.2.5**. and **4.8.2.6** for all types of civil airfields. This guidance should be published in the group supplement to this AFI.

4.8.2.6. A US Government tenant unit (e.g. ANG, USCG) is listed for the airport of intended landing and airport facilities or ground support equipment can support the aircraft concerned.

4.9. Volume Training. Flying units shall coordinate with respective ATC agencies and civil airport authorities before conducting volume training at civil airports or within airways (T-2).

4.10. UAS Airfields and Operations.

4.10.1. Except for divert or emergency situations, MAJCOMs shall approve all airfields authorized for use by UAS. Operations may require an approved Certificate of Authorization (COA) and appropriate LOA between the employing unit, ATC, and airfield management.

4.10.1. **(ACC)** RPA are approved to operate from any ACC home-station RPA airfield, all FOBs, and other MAJCOM same-MDS RPA airfields with prior coordination (to include required COAs). Other approved locations are listed on the ACC/A3M website. Submit all additional requests to approve airfields through the NAF up to ACC/A3M for processing.

4.10.2. For operations outside special use airspace (or when required within), the mission tasking authority shall coordinate through HQ USAF/A35 to obtain a COA or waiver from the FAA (T-0). Before submitting, verify the COA complies with current FAA requirements at **http://www.faa.gov/about/initiatives/uas/**.

4.11. Aviation Into-Plane Reimbursement Card (AIR CARD®) Responsibilities. Use the AIR CARD® only for fuel and required ground services (T-0). Refuel at military installations as a first choice followed by contract fixed base operators (FBOs) (T-0). Refuel at non-contract FBOs only if mission needs warrant servicing at such locations (T-0). Further information, including documentation procedures and updated lists of contract FBOs is available at **https://www.airseacard.com**.

4.12. Weather Information.

4.12.1. **Authorized Sources.** Use the following prioritized list of sources (T-1):

4.12.1.1. Home or local installation OSS Weather Flight or MAJCOM-designated centralized briefing facility (or equivalent);

4.12.1.1.1. **(Added-ACC)** When requesting a written weather briefing use DD Form 175-1, *Flight Weather Briefing*; or any locally-approved mission execution forecast briefing form.

4.12.1.2. Regional Operational Weather Squadron (OWS);

4.12.1.3. Other DoD military weather sources (e.g., US Navy/Marine Corps weather facilities);

4.12.1.4. Other published MAJCOM-approved weather sources. MAJCOMs will provide guidance on use of non-DoD weather sources (e.g., commercial websites, flight planning services);

4.12.1.5. Other US Government (USG) weather facilities/services (e.g., National Weather Service, FAA);

4.12.1.6. Foreign civil or military weather service (use only when DoD military resources or USG services are unavailable in OCONUS locations).

4.12.2. **Runway Visual Range (RVR)** . RVR reports apply to all takeoffs, landings, and straight-in approaches to the runway and take precedence over any other visibility report for that runway. Use the static RVR when available. If only a variable RVR report is received and a static RVR cannot be determined, apply the lowest reported RVR value. If necessary, convert the reported visibility from one format to another (e.g. RVR to Prevailing Visibility (PV)) only for takeoffs and straight-in approaches using the conversion tables printed in the front of the Terminal Procedures Publication (TPP) booklet. For conversions, use the higher value; do not interpolate.

4.12.2.1. If RVR is unavailable, use PV.

4.13. Aeronautical Information and Publications. Operational commanders are responsible for providing their crews with access to appropriate aeronautical information and publications for flight (T-1).

4.13.1. **Authorized Information and Publications.** Obtain and use information or publications from US Government (USG) sources as first preference (T-2). Do not use aeronautical information in flight which is out of date, incomplete, illegible, contains unfamiliar procedures, or is published in a language other than English (T-0).

4.13.1.1. **Non-USG Terminal Procedures.** Non-USG terminal procedures are authorized after a Terminal Instrument Procedures (TERPS) review IAW AFI 11-230, *Instrument Procedures*; this does not apply to Standard Terminal Arrival Procedures (STARs). MAJCOM/A3 in the grade of O-8 or above (or the first O-8 in the MAJCOM/A3 chain of command) may waive the TERPS review. This waiver authority will not be further delegated (T-0). MAJCOMs shall develop aircrew training for use of non-USG products.

4.13.1.1. **(ACC)** ACC aircrew may use non-USG procedures authorized by AFI 11-230, *Instrument Procedures,* without additional approval.

4.13.1.1.1. **(Added-ACC)** Aircrew flying Jeppesen procedures must have completed ACC approved Jeppesen training. This is normally accomplished via the Instrument Refresher Program IAW AFMAN 11-210, *Instrument Refresher Program (IRP).*

4.13.1.1.2. **(Added-ACC)** Non-USG Terminal Procedures training will be incorporated into the Instrument Refresher Program (IRP) and taught by certified Instrument Refresher Course (IRC) instructors IAW AFMAN 11-210, *Instrument Refresher Program (IRP),* or OG/CC approved syllabus.

4.13.2. **Electronic Equivalent and Non-Standard Formats.** Paper publications and documents are not required if replicated by electronic means and authorized by the MAJCOM. Formats which are rendered from a database or which do not maintain the original size, scale, format, or color may be authorized by the MAJCOM.

4.13.2.1. **(Added-ACC)** ACC aircrews are authorized the use of electronic publications, FLIP and documents IAW AFI 11-215, and ACCI 11-270.

4.13.3. **Required Publications.** Follow MAJCOM or MDS-specific guidance for required publications to be available in the aircraft or accessible to UAS operators (e.g., navigation charts, FIH, TPP) (T-1).

4.13.3. **(ACC)** FLIP Availability. FLIP high and/or low instrument procedures will be available for the PIC, pilot, navigator, as applicable, to monitor each instrument procedure flown.

4.13.4. **NOTAMS.** Obtain NOTAMS from the Defense Internet NOTAM Service (DINS) or the Defense Aeronautical Information Portal (DAIP) when it replaces DINS. If unavailable, obtain NOTAMS by contacting one of the installations listed in FLIP or the nearest Aeronautical Information Service (T-0).

4.13.4.1. If using non-USG products or databases, obtain the associated NOTAMs, alerts, and advisories from the respective country or agency (T-1).

4.13.5. **Navigation, Terrain, and Obstacle Databases.** Obtain databases through MAJCOM-authorized processes. Review aeronautical navigation database NOTAMS prior to flight (T-1).

4.13.5. **(ACC)** ACC-approved databases include the databases available through the NGA at **https://www.geo.nga.mil/products/aero/**, and any database which has been approved by the FAA IAW procedures outlined in Advisory Circular (AC) 20-153B. Operations Group Commanders are responsible for publishing guidance on how the data is moved from an approved database to a point at which the PIC can meet the requirements of **4.5.1.4**, to include any restrictions or MDS-specific limitations.

4.13.6. **Global Navigation Satellite System (GNSS) Predictive RAIM.** Predictive RAIM is mandatory. MAJCOMS will publish MDS-specific information for use of RAIM prediction procedures.

4.13.6. **(ACC)** ACC aircrews will use GNSS predictive RAIM equipment IAW AFMAN 11-2MDSV3, MDS-specific TTPs, T.O. and local guidance.

4.13.6.1. **Precise Positioning Service (PPS) RAIM** . MAJCOMS may authorize use of civil (i.e. Standard Positioning Service (SPS)) RAIM prediction services if a PPS RAIM prediction tool is not available.

4.14. Area Navigation (RNAV) and Required Navigation Performance (RNP).

4.14.1. Before flight, confirm the availability of the performance-based operations infrastructure for the intended route and procedures (T-0).

4.14.2. If a specified RNP level cannot be achieved, revise the route or delay departure until the appropriate RNP level can be assured (T-0).

4.14.3. The onboard navigation database should be current for the region of intended operation. MAJCOMs will publish guidance for continued enroute operations with a non-current navigation database. For terminal procedure guidance, see paragraph 7.3.2.

4.14.4. Ensure planned waypoints and procedures (departure, arrival, approach) are included in the current onboard navigation database prior to flight (T-0).

4.15. IFR Flight.

4.15.1. Fly USAF fixed-wing aircraft under IFR to the maximum extent practical. Pilots shall fly under IFR if:

4.15.1. **(ACC)** Flights under VFR radar services to, from or between training areas, low-level routes and low-altitude tactical navigation (LATN) areas fulfill the intent of this paragraph and may be conducted in lieu of IFR.

4.15.1.1. Weather conditions do not permit VFR flight (T-0);

4.15.1.2. Airspace rules require IFR flight (T-0);

4.15.1.3. Operating in excess of 180 knots true airspeed (KTAS) within (not simply crossing) federal airways (T-1); or,

4.15.1.4. Operating fixed-wing aircraft at night, unless the mission cannot be flown under IFR.

4.15.2. **IFR Destination Filing Requirements.** Flowcharts are available in **Attachment 2** (Fixed-Wing) or **Attachment 3** (Helicopter).

4.15.2.1. **Required Weather** .

4.15.2.1.1. **Fixed-Wing and Helicopter.** Prevailing weather for the estimated time of arrival (ETA) ±1 hour at destination must be at or above the lowest compatible published landing minimums (TEMPO conditions may be below published minimums at ETA ±1 hour) (T-1). Helicopters may reduce visibility by one-half, but no lower than 1/4 SM PV or 1,200 ft RVR (T-1). See **paragraph 4.15.3** for alternate requirements (T-1). **Exception:** MAJCOMs may authorize filing to a destination with weather below the lowest compatible landing minimums, but must establish supplemental recovery procedures such as the use of two or more alternate airports, additional holding fuel, etc.

4.15.2.1.1. **(ACC)** Fixed-Wing Fighter Aircraft other than E/RQ-4. Fighter PICs may file to a destination airport if weather (ceiling and visibility) is forecast to be at or above

their pilot weather category minimums or published minimums, whichever is higher. For operational necessity, OG/CC may approve PICs to file to a destination airport where weather is forecast to be below the lowest published approach minimums (or pilot category minimums) if two suitable alternate airports are available and designated on the flight plan. Both alternates must be at least 45 NM apart, be at least 10 NM from the destination, have an operational and compatible precision approach and meet or exceed the criteria for alternate airport weather for filing purposes in paragraph **4.15.3.4**. The aircraft will have sufficient fuel to execute an approach and missed approach at the destination airport, proceed to the alternate requiring the greatest fuel expenditure and still meet AFI 11-202V3 or appropriate AFI/AFMAN 11-2 MDS-Specific, Volume 3 fuel reserve requirements, whichever is higher.

4.15.2.1.1.1. For a straight-in or sidestep approach, the forecast weather must meet required visibility minimums (T-1).

4.15.2.1.1.2. For a circling approach, the forecast weather must meet both the ceiling and prevailing visibility minimums (T-1).

4.15.2.1.1.3. For an RNAV/RNP/GNSS approach based on SBAS and annotated with the "W" symbol, weather must meet Lateral Navigation (LNAV) minimums (T-1).

4.15.2.1.2. **UAS.** In the absence of MAJCOM UAS weather guidance, follow manned fixed-wing and helicopter weather requirements (T-1).

4.15.2.1.2. **(ACC)** UAS aircrew follow MDS Volume 3 guidance for filing and alternate requirements.

4.15.2.2. **Available Instrument Approach.**

4.15.2.2.1. Pilots must file IFR to a destination or an alternate with a compatible instrument approach (T-1). If there is no compatible published approach at the destination, pilots may proceed to a point served by a published approach or to an IFR point where forecast weather at ETA ± 1 hour allows the pilot to continue VFR to the destination.

4.15.3. **Requiring an IFR Alternate.**

4.15.3.1. **Weather.** An alternate is required when the worst weather at destination, to include TEMPO conditions, at the ETA ±1 hour is less than:

4.15.3.1.1. **Fixed-Wing Aircraft.** A ceiling of 2,000 ft or a visibility of 3 SM (T-0).

4.15.3.1.2. **Helicopters.** A ceiling of 1,000 ft. (or 400 ft above the lowest compatible approach minimums, whichever is higher) or a visibility of 2 SM (T-0).

4.15.3.1.3. **UAS.** MAJCOMs will determine alternate airfield policies for UAS.

4.15.3.1.3. **(ACC)** UAS aircrews follow MDS Volume 3 guidance for filing and alternate requirements. E/RQ-4 PICs will file an alternate if the forecast crosswinds at the destination (ETA +/- 1 hour) are greater than 15 knots.

4.15.3.2. **Other Conditions Requiring an Alternate:**

4.15.3.2.1. All compatible approaches require radar (T-1);

4.15.3.2.2. Required navigational aids (NAVAID) will be unmonitored (T-1);

4.15.3.2.3. The destination has no weather reporting capability (T-1);

4.15.3.2.4. The airfield's lowest compatible approach weather minimums are greater than or equal to a 1,500 ft. ceiling or 3 SM visibility (T-1); or,

4.15.3.2.5. GPS is the only available NAVAID (T-1).

4.15.3.2.6. **(Added-ACC)** Designate an alternate airport in the flight plan, regardless of forecast weather, when filing to a destination in Alaska, Canada, Greenland, Guam, Hawaii or Iceland.

4.15.3.3. **Exceptions:**

4.15.3.3.1. **Remote or Island Destinations** . MAJCOMs may authorize holding for a specified time in lieu of filing an alternate for remote or island destinations. MAJCOMs will define remote or island destinations and prescribe weather criteria and recovery procedures.

4.15.3.3.1.1. **(Added-ACC)** Consider an airfield to be a remote or island destination when its location precludes flight to a suitable alternate. This destination airfield must meet weather requirements prescribed in paragraph **4.15.3.4**. Additionally, if radar is required for the only compatible approach at the destination, requirements are the same as if there is no compatible published approach (para **4.15.2.2.1**).

4.15.3.3.1.2. **(Added-ACC)** For E-3, E-8, E-9, U-2, C/EC/HC/MC-130 and OC/RC/TC/WC-135s. If prevailing weather conditions require an alternate, these aircraft will have fuel on board to hold for 2 hours at the destination fix or AFI/AFMAN 11-2 MDS Specific, Volume 3 minimums, whichever is greater**.**

4.15.3.3.1.3. **(Added-ACC)** For A-10, F-15, F-15E, QF/F-16, F-22, F-35, T-38, and HH-60Gs. Compute fuel requirements using a fuel reserve as prescribed in paragraph **4.18.3**, from departure to over the destination fix. Include fuel for 30 minutes holding at destination fix, plus fuel for the penetration and landing.

4.15.3.3.2. Alternate requirement may be cancelled enroute if weather conditions improve at destination to exceed **paragraph 4.15.3.1**.

4.15.3.4. **Selecting an Alternate.** The worst alternate forecast weather conditions for ETA ±1 hour, to include TEMPO conditions (except those caused by thunderstorms, rain showers, or snow showers) will meet or exceed:

4.15.3.4.1. **Fixed-Wing Aircraft.** A ceiling of 1000 ft., or 500 ft. above the lowest compatible minimum, whichever is higher; and a visibility of 2 SM or 1 SM above the lowest compatible minimum, whichever is higher (T-0).

4.15.3.4.2. **Helicopters.** A ceiling of at least 200 ft. above, and a visibility of at least 1 SM above the lowest compatible published landing minimum (T-0).

4.15.3.4.3. **UAS.** MAJCOMs will establish UAS alternate airfield policies.

4.15.3.4.3. **(ACC)** E/RQ-4 PICs must select an alternate with forecast winds less than, or equal to, 15 knots.

4.15.3.4.4. **Alternate without a Published or Compatible Instrument Approach Procedure.** Forecast weather for the ETA (±1 hour) must permit a VFR descent from a published IFR altitude to a VFR approach and landing (T-0). Conditions in para 4.15.3.5. do not apply when utilizing this option.

4.15.3.5. **Conditions Disqualifying an Alternate.** The disqualifying conditions below may be listed throughout various sources (e.g., TPP, NOTAMs, IFR Supplement):

4.15.3.5.1. All compatible approaches require radar (T-1).

4.15.3.5.2. All compatible approaches require an unmonitored NAVAID (T-1).

4.15.3.5.3. The airfield does not have a weather reporting service (T-1).

4.15.3.5.4. " ANA" (Alternate Not Authorized) on all compatible approaches (T-1).

4.15.3.5.5. Any note disqualifying the airfield or all compatible approaches in the IFR Alternate Minimums section (T-1).

4.15.3.5.6. GPS is the only available NAVAID (T-1).

4.16. VFR Flight.

4.16.1. Weather. Do not operate under VFR when the flight visibility is less than, or at a distance from clouds that is less than the criteria listed in **Table 6.1** or **6.2**. (T-0).

4.16.2. Fly fixed-wing aircraft under VFR only when required for mission accomplishment. Mission examples include: operational necessity, host-nation requirements, training, proficiency or evaluation sorties, aircraft equipment that precludes IFR flight, and ATC or NAVAID limitations that preclude IFR flight. All aircraft comply with the AFMAN 11-217 series and the following:

4.16.2.1. Ensure VFR operations are authorized and properly planned (T-2).

4.16.2.2. Utilize radar advisory and monitoring or control services when practical to ensure flight following by any available means (e.g. FSS or C2 agency) (T-2).

4.16.2.3. When conditions (weather, airspace, etc.) prevent completing the mission under VFR, alter route and continue under VFR until reaching the destination, obtain an IFR clearance, or land at a suitable location (T-0).

4.16.2.4. When conducting tactical operations, fly under VFR unless compliance with VFR degrades mission accomplishment (T-2).

4.16.2.5. **Special VFR (SVFR)** . Fixed-wing aircraft shall not fly under SVFR (T-1). MAJCOMs may allow helicopter aircrews to fly under SVFR IAW 14 CFR §91.157 (within the NAS) or appropriate host-nation guidance.

4.16.2.5. **(ACC)** Helicopter aircrew are authorized to request and operate under SVFR within the surface area of an airfield reporting IFR/SVFR with the following restrictions:

4.16.2.5.1. **(Added-ACC)** Operations group commanders will publish written guidance if they intend to authorize operations under Special VFR**.**

4.16.2.5.2. **(Added-ACC)** Multiple aircraft operating as a formation are considered a single aircraft.

4.16.2.6. **VFR Over-the-Top** . When operating VFR above a ceiling, follow guidance in AFMAN 11-217 series.

4.16.2.7. **IFR "VFR-on-Top"** . Pilots may request "VFR on Top" operations (IAW AFMAN 11-217 series) when the mission dictates.

4.17. Flight Plans.

4.17. (ACC) Flight Plans. Flight plans are maintained at airfield management IAW AFI 13-204V3.

4.17.1. Ensure a flight plan is filed IAW MAJCOM guidance for any flight (T-1). By filing a flight plan, the PIC certifies:

4.17.1. **(ACC)** Flight Plan Signature. Filing by means of phone, radio (direct to FAA, FSS, or ICAO equivalent), computer, or Electronic Flight Bag (EFB) in lieu of obtaining a PIC signature on a flight plan is authorized when airfield management operations services are not feasible.

4.17.1.1. The flight was properly ordered, authorized, and released IAW AFI 11-401;

4.17.1.2. The flight will be conducted IAW all governing directives (see **paragraph 1.2**);

4.17.1.3. Compliance with paragraph 4.5;

4.17.1.4. The flight plan has been reviewed for completeness and accuracy;

4.17.1.5. Responsibility for the safety of the aircraft, the formation, and its occupants;

4.17.1.6. The flight complies with Air Defense Identification Zone (ADIZ) restrictions and SUA or MTR scheduling and coordination procedures specified in FLIP and NOTAMs.

4.17.1.7. **(Added-ACC)** Formation Flight Plans. The primary flight lead in formation flights will sign the flight plan. This signature is authority for the flight to proceed in the event lead aborts. There is no requirement for additional signatures.

4.17.1.7.1. **(Added-ACC)** When a formation flight or elements will separate and continue under two or more separate flight plans, each PIC/element lead will sign a flight plan.

4.17.2. **Passenger Manifests and Crew Lists.** List passengers on a DD Form 2131, *Passenger Manifest*, or a MAJCOM-approved form (T-1). File the manifest and crew list with the flight plan, the passenger service facility, or other responsible agency (T-0). Notify C2 prior to departure if there is a passenger manifest (or crew list) change (T-2). When able, process any changes with the original processing facility or a responsible agency.

4.17.3. **Flight Plan Changes.** The format for making changes to a flight plan is printed on the back of the DoD IFR Supplement. Ensure ATC and/or destination is aware of changes to prevent erroneous Search and Rescue (SAR) or unannounced arrival (T-0). Before takeoff or while airborne, changes may be made to the original filed flight plan without re-filing provided:

4.17.3.1. The change does not penetrate an ADIZ;

4.17.3.2. The controlling ATC agency approves the change for an IFR flight; or,

4.17.3.3. The change complies with applicable host-nation rules.

4.17.3.4. **(Added-ACC)** Unless emergency conditions dictate otherwise, when a significant change in the planned flight or planning factors for the flight occur either before takeoff or en route, the PIC ensures the appropriate unit command and control agency is notified when able.

4.17.4. **Closing the Flight Plan.** When landing at a tower-controlled airfield in the NAS, an IFR flight plan should close automatically. When landing at a military airfield, base operations will close VFR/DVFR flight plans. When landing at a civilian airfield without a tower or arriving at a civilian airfield VFR/DVFR, the pilot is responsible for ensuring that flight plans are closed, either by contacting an FSS, the originating military base operations, or through an ATC facility (T-0).

4.17.5. **(Added-ACC)** MAJCOM-Approved Forms. Units may use a locally designed form for local area VFR/IFR flight plans provided:

4.17.5.1. **(Added-ACC)** The form meets the minimum flight plan information requirements for VFR/IFR flights and the flight authorization requirements outlined in AFI 11-401, *Aviation Management*.

4.17.5.2. **(Added-ACC)** The base and appropriate ARTCC have established IFR local stereo type flight plan agreements.

4.17.5.3. **(Added-ACC)** The above procedures have been coordinated with Operations Flight Commander (AOF/CC) or Airfield Operations Manager.

4.17.5.4. **(Added-ACC)** Aircraft conducting air defense activities may use scramble/ airborne flight order flight plans. The Air Defense Sector and the concerned flying unit will jointly prepare these flight plans. The flying unit will file such flight plans with the appropriate ARTCC.

4.17.5.4.1. **(Added-ACC)** Label these forms "Local Flight Clearance – Flight Order" when used to combine local area VFR/IFR stereo flight plans. Approve as a flight order only for local area IFR round robins. Flights that terminate at an installation not under the operational control of the base of departure require a separate flight clearance and flight order. Air Defense units may use this clearance for all flights within the local area, between units under the control of the Air Defense Region having operational control of the aircraft and for other air defense activity that is in the interest of national security.

4.18. Fuel Requirements.

4.18.1. Ensure sufficient fuel is available onboard the aircraft to comply with the requirements of this instruction and safely conduct the flight (T-0). Use MAJCOM-approved fuel efficiency techniques and procedures to the maximum extent practical (T-2). Before takeoff or immediately after in-flight refueling, the aircraft must have enough usable fuel to complete the flight:

4.18.1.1. To a final landing, either at the destination airport or alternate airport (if required), plus fuel reserves (T-0); or,

4.18.1.2. Between Air Refueling Control Points (ARCPs) and then to land at the destination (or a recovery base, if refueling is not successful), plus the fuel reserve (T-2).

4.18.1.2.1. Helicopters may fly between ARCPs without required fuel to destination or recovery base in the event of an unsuccessful air refueling.

4.18.2. **Alternate Airport Fuel Requirements.** When an alternate airport is required, fuel required for an approach and missed approach at the intended destination must be included in the total flight plan fuel if visibility-only weather criteria is used at the destination (T-1). Fuel required for a missed approach is not required if both ceiling and visibility criteria are used (T-1).

4.18.3. **Fuel Reserve.** Ensure the aircraft is carrying enough usable fuel on each flight to increase the total planned flight time between refueling points by 10 percent (up to a maximum of 45 minutes for fixed-wing or 30 minutes for helicopters) or 20 minutes, whichever is greater (T-0). Compute fuel reserves using MAJCOM-defined consumption rates for normal cruising speeds or the following:

4.18.3.1. For reciprocating engine aircraft and helicopters, use fuel consumption rates for normal cruising altitudes (T-1).

4.18.3.2. For turbine-powered aircraft use fuel consumption rates that provide best endurance at 10,000 ft. MSL (T-1).

4.18.3.3. If the MAJCOM authorizes holding (instead of an alternate airport) for a remote or island destination, do not consider the prescribed holding time as part of the total planned flight time or fuel reserve (T-1).

4.18.4. **Equal Time Point (ETP).** In the absence of MDS-specific guidance, multi-engine aircraft without the ability to in-flight refuel, operating for extended periods over large bodies of water or desolate land areas (outside gliding distance to a suitable landing site) shall calculate and plot on a navigational chart an ETP to a suitable alternate for that mission leg. Contingency fuel requirements shall also be planned (e.g., engine-out depressurized flight from an ETP to a suitable landing site) (T-1).

4.18.5. **(Added-ACC)** Flight Logs. PIC's will ensure the flight log documents provide air navigation, oceanic crossing, and fuel planning information, as appropriate. Approved flight logs include: AF Form 70, *Pilot's Flight Plan and Flight Log*, Navigator's flight log, a MAJCOM-approved computer-generated flight log or form, or flight planning computations annotated on a navigation chart. Flight logs created by commercial programs are allowed. The validity of calculations from these programs are the responsibility of the PIC, and operations group commanders should publish any restrictions to these programs in the local supplement to this document. All flights require flight logs except for active air defense scrambles, operational search and rescue missions, and T-38/QF-X aircraft.

4.18.5.1. **(Added-ACC)** The following flight logs are authorized:

4.18.5.1.1. **(Added-ACC)** Navigation chart and/or mission flight plan identifying the route of flight from takeoff to landing and containing all the information that would normally be on the AF Form 70.

4.18.5.1.2. **(Added-ACC)** SQ/CC may authorize flight logs that were developed by other MAJCOMs if the logs suit that unit's requirements or SQ/CCs may authorize the use of locally generated logs.

4.18.5.1.3. **(Added-ACC)** E/RQ-4 pilots may use the Air Force Mission Support System (AFMSS) computer-generated mission flight plan log, or Joint Mission Planning System (JMPS) logs.

4.18.5.1.4. **(Added-ACC)** Saved EFB routing or downloaded aircraft data are approved flight log solutions.

4.19. Preflight Briefings.

4.19.1. Prior to flight, ensure each crewmember and passenger is briefed on items affecting safety or mission completion (T-0). At a minimum, briefings will include:

4.19.1.1. Emergency signals and procedures (T-0);

4.19.1.2. Aircrew and passenger flight equipment/systems usage information to include the location and use of emergency exits, parachutes, oxygen, communications systems, and survival equipment (T-0); and,

4.19.1.3. Safety precautions and restrictions to include Foreign Object Damage (FOD) hazards and electronic device prohibitions (T-1).

4.19.1.3.1. **(Added-ACC)** In order to increase awareness on potential conflicts with other aircraft, aircrews will brief the following special subject on every sortie: Radar/visual search responsibilities for departure, en route, recovery and high density traffic areas; and mid-air collision avoidance (from other military aircraft and/or civilian aircraft).

Chapter 5

DEPARTURE

5.1. Weather.

5.1.1. **Minimum Takeoff Weather.** Takeoffs are prohibited when existing weather is below landing minimums (T-2). MAJCOMs will publish alternative takeoff minimums and recovery procedures when takeoff weather is lower than published landing minimums. In all cases, takeoff visibility must be 600 RVR (180 meters) or greater (T-1).

5.1.1.1. **Fixed-wing RVR Requirements.** Takeoff with weather below 1600 RVR is not authorized unless the runway has operating centerline lights, visible runway centerline markings, and two operative RVR reporting systems (T-1). All RVR readings must meet or exceed minimum authorized values for departure (T-1).

5.1.1.2. **(Added-ACC)** Takeoff Minimums. In addition to paragraph **5.1.1.1**. :

5.1.1.2.1. **(Added-ACC)** Fighter aircraft must have takeoff weather equal to or greater than the approach and landing minimums specified in the applicable pilot weather category of **Table 7.6**. **(T-3).** The OG/CC or equivalent may approve takeoffs when takeoff weather is below the applicable pilot weather category.

5.1.1.3. **(Added-ACC)** Takeoff Alternate Airfields. A suitable takeoff alternate airfield is one within 30 minutes for single/twin engine aircraft and within 1 hour for three or more engine aircraft at cruising speed.

5.1.1.3.1. **(Added-ACC)** For a takeoff alternate airfield with an operational published precision approach procedure, the weather must be reported and forecast to remain no lower than a ceiling of 600 feet (180 m) and visibility of 2 miles (3.2 km) from takeoff until 1 hour after possible ETA.

5.1.1.3.2. **(Added-ACC)** For a takeoff alternate airfield with an operational published non-precision approach procedure, the weather must be reported and forecast to remain no lower than a ceiling of 800 feet (240 m) and visibility of 2 miles (3.2 km) or ceiling of 500 feet (150 m) above and visibility 1 mile (1.6 km) above the lowest published landing minimum, whichever is higher, from takeoff until 1 hour after possible ETA.

5.1.1.3.3. **(Added-ACC)** Battle Management/Reconnaissance/Treaty Verification/Tanker aircraft will file a takeoff alternate when departure airfield weather is below published landing minimums for that airfield.

5.1.2. **Freezing Precipitation.** Do not takeoff with ice, snow, frost, or other contamination adhering to the wings, control surfaces, propellers, engine inlets, or other critical surfaces of the aircraft, unless authorized by the flight manual (T-2).

5.1.2.1. A thin coating of frost is permitted on the fuselage, provided the lettering and/or paint lines are visible.

5.1.2.2. Light frost (up to 1/8 inch thick) caused by super-cooled fuel is permitted on the lower wing surface (i.e., below the fuel tank area) if the fuselage and all other control surfaces are free of icing. If deicing is required on any other aircraft surface, the under wing frost shall also be removed (T-2).

5.1.2.3. Information on the removal and prevention of frozen precipitation is contained in AF T.O. 42C-1-2, *Anti-Icing, De-Icing and Defrosting of Parked Aircraft*.

5.1.3. **Takeoff Near Hazardous Weather.** Do not takeoff where thunderstorms or other hazardous conditions are producing hail, strong winds, gust fronts, heavy rain, lightning, wind shear, or microbursts (T-2).

5.2. Turns after Takeoff. Do not turn after a takeoff until at least 400 ft. above the Departure End of the Runway (DER) elevation, at a safe airspeed, and past the end of the runway (if visible) unless specifically cleared by the controlling agency, required by a published procedure, or when executing a closed pattern (T-0).

5.2.1. When turning on departure from an aerodrome with a temperature of 0° C or less, aircrew will temperature correct all minimum specified turn altitudes (including the 400 ft. above DER) utilizing the temperature correction chart in the FIH (T-1).

5.3. VFR Climb Performance. Unless specifically authorized, fixed-wing multi-engine aircraft will not depart a location under VFR without ensuring that they can vertically clear published IFR departure procedure restrictions along the planned departure route with one engine inoperative (OEI) (T-2).

5.3.1. **(Added-ACC)** ACC fixed-wing multi-engine aircraft are authorized to depart VFR even if they do not meet published IFR departure climb gradients with one engine inoperative. The PIC will complete a thorough review of the planned departure track to ensure terrain and obstacle clearance capability.

5.4. IFR Climb Performance. Unless otherwise published and charted with "ATC" designation, all climb gradients must be assumed to be obstacle based. Only MAJCOM-authorized procedures for climb performance assessment may be used (vice locally developed procedures). MAJCOMs may authorize SDPs. Aircrew must be trained before use of any SDP (T-1).

5.4.1. **Low Close-in Obstacles.** Ensure the aircraft can vertically clear applicable published low close-in obstacles along the planned ground track (T-1). Low close-in obstacles may be listed in the Obstacle Departure Procedures  (ODP) section, NOTAMs, or charted on the published procedure. Published or ATC climb gradients do not account for low close-in obstacles in their climb gradient calculations; therefore, low close-in obstacle clearance is not assured when complying with the published or ATC climb gradient.

5.4.2. **ATC Climb Gradient.** Aircraft are required to meet ATC climb gradients with all engines operating (AEO) (T-0). If the aircraft does not have the computed performance to meet the charted ATC climb gradient, coordinate with ATC prior to flight.

5.4.3. **Obstacle Climb Gradient.**

5.4.3.1. Ensure the aircraft can comply with the respective obstacle climb gradients below:

5.4.3.1.1. Ensure the aircraft can meet or exceed 200 ft/NM or the published climb gradient, whichever is higher, to an appropriate IFR altitude (T-0).

5.4.3.1.2. **Multi-Engine Fixed-Wing Aircraft.** With OEI, ensure the aircraft can meet 200 ft/NM or the published climb gradient, whichever is higher, to an appropriate IFR altitude (T-0).

5.4.3.1.2.1. If unable to meet published obstacle climb gradient OEI, and operationally necessary, the MAJCOM/A3 may authorize subtraction of up to 48'/NM from the required obstacle climb gradient. This subtraction does not apply to SDPs.

5.4.3.1.2.1. **(ACC)** ACC/A3 authorizes subtraction of up to 48'/NM from the required obstacle climb gradient OEI if deemed operational necessary. **(T-3).**

5.4.3.2. If unable to meet the required obstacle climb gradient, consider aircraft, mission, or environmental changes such as reducing aircraft gross weight or delaying for more favorable weather conditions. If still unable to comply with the required obstacle climb gradient, an IFR departure is not authorized (T-0).

5.4.3.2.1. If the mission justifies the increased risk, MAJCOM/A3 may authorize a departure in VMC regardless of climb gradient compliance. At MAJCOM/A3 discretion, waiver authority may be further delegated to no lower than the operations group commander (or equivalent).

5.4.3.2.1. **(ACC)** ACC/A3 authorizes the OG/CC to allow an ACC aircrew to climb in VMC to the minimum altitude IAW **6.2.2** or depart VFR if they are unable to meet or exceed the required IFR departure climb gradient and the mission justifies the increased risk. A VMC climb to the minimum IFR altitude or a VFR departure is to be used only as a last resort for mission accomplishment. Operations Group commanders will publish guidance if intending to exercise this authority.

5.5. IFR Departure Methods. Obstacle Departure Procedures (ODPs) and/or Standard Instrument Departures (SIDs) should be flown to the maximum extent possible.

5.5.1. Depart IFR using one, or a combination of, the methods listed below (T-1). If the airport does not have one of these IFR departure methods, an IFR departure is not authorized (T-1).

5.5.1.1. Diverse Departure (ICAO - Omnidirectional Departure).

5.5.1.2. Obstacle Departure Procedure▼(ODP).

5.5.1.3. Standard Instrument Departure (SID).

5.5.1.4. Specific ATC Departure Instructions.

5.5.1.5. Non-Standard Takeoff Minimums.

5.5.1.6. MAJCOM Certified Procedure.

5.5.2. The following information applies to the departure methods listed above:

5.5.2.1. **Diverse Departure (ICAO - Omnidirectional Departure).** A diverse departure is an IFR departure procedure used at an airport that has at least one published approach but lacks non-standard takeoff minimums and/or IFR departure procedures. Track runway centerline to 400 ft. above the DER elevation before turning on course. Ensure aircraft will vertically clear applicable low close-in obstacles published in NOTAMs or the Takeoff Minima and ODPs ▼ before turning on course. Diverse departures are not authorized when an ODP, obstacle climb gradient, or non-standard takeoff weather minimums are published for the planned departure runway (T-0).

5.5.2.1.1. **Sector Diverse Departure** . Fly "sector" diverse departures as published (T-0).

5.5.2.2. **Obstacle Departure Procedures (ODP)** . Also known as a "trouble T" ( ), ODP refers to textual or graphical instructions to ensure departure obstacle clearance. Notify ATC (or other traffic) when planning to depart via an ODP (T-0). ODPs also include:

5.5.2.2.1. **Visual Climb Over Airport (VCOA)** . Do not fly any VCOA procedure until completion of MAJCOM-specified training (T-1). The weather must be at or above the minimums published for the VCOA (T-0). Unless otherwise published, consider VCOA visibility requirements as the "remain within" distance and do not exceed this radius from the center of the airfield while climbing to the specified altitude (T-1). Notify ATC (or other traffic) when planning to depart via the VCOA (T-0). Except for MAJCOM-approved NVD trained and equipped aircrew, do not fly VCOA procedures at night (T-1).

5.5.2.2.2. **Reduced Takeoff Runway Length (RTRL)** . When using a published RTRL procedure, ensure the aircraft can attain a safe liftoff speed prior to the distance remaining specified in the procedure (T-0). Aircrew will only use RTRL procedures if published as an ODP in FLIP (T-1). MAJCOM-approved RTRL procedures will be considered a published ODP.

5.5.2.3. **Standard Instrument Departures (SID).** Follow SID procedures as published (T-0). Comply with applicable notes, low close-in obstacles, and climb gradients on the SID (T-0). SIDs without a published climb gradient have been assessed at 200 ft/NM. If the SID does not have published low close-in obstacles but has an ODP annotated, refer to the corresponding runway ODP for potential low close-in obstacles. Reference all published low close-in obstacle locations to ensure compliance.

5.5.2.3.1. Retrieve RNAV/RNP/GNSS procedures in their entirety by procedure name from a current navigation database and compare against approved publications (T-0).

5.5.2.4. **Specific ATC Departure Instructions.** ATC instructions refer to navigational guidance (e.g. heading, routing, and altitude) issued with a departure clearance.

5.5.2.4.1. If the departure runway has multiple published climb gradients, pilots must meet or exceed the highest gradient when departing via ATC instructions (T-0). This does not apply to a charted Diverse Vector Area (DVA).

5.5.2.4.2. **Diverse Vector Area (DVA)** . A DVA may be established to allow radar vectors in lieu of an ODP. The symbol may denote the existence of a charted DVA within FLIP. Headings will be as assigned by ATC and climb gradients, when applicable, will be published.

5.5.2.4.2.1. If a DVA is charted, only use the climb gradient associated with the DVA.

5.5.2.4.3. Outside the NAS in a non-radar environment, confirm minimum climb gradient for departure sector (T-0). The obstacle-based climb gradient is not standardized at 200 ft/NM outside the NAS.

5.5.2.5. **Non-Standard Takeoff Minimums.** Departures using non-standard takeoff minimums (ceiling and visibility) must ensure the aircraft is at or above the published ceiling by the end of the runway (OEI for multi-engine fixed-wing aircraft), then continue climbing at 200'/NM or published climb gradient associated with the non-standard takeoff minimums (or IAW **5.4.3.1.2.1**) to a minimum IFR altitude (T-1). Non-standard takeoff minimums shall not be used to "see-and-avoid" obstacles (T-1).

5.5.2.5.1. If the ODP has a non-standard takeoff minimum with a published climb gradient, cross the departure end of runway at the published ceiling then comply with the published climb gradient (T-1).

5.5.2.6. **MAJCOM Certified Procedure.** In Restricted Areas or during contingency operations, MAJCOM/A3s may develop and authorize departure procedures for their aircraft at specific locations if no other procedure can be developed IAW AFI 11-230. Complete MAJCOM-specific training before using such procedures (T-1).

Chapter 6

ENROUTE

6.1. Airspace Clearance Authority.

6.1.1. **Uncontrolled Airspace.** The PIC is the clearance authority for IFR or VFR flight in uncontrolled airspace (T-0).

6.1.2. **Controlled Airspace.**

6.1.2.1. **VFR.** The PIC is the clearance authority for VFR flight (if allowed) in controlled airspace. If cancelling an IFR clearance, request flight following to the maximum extent possible (T-2). VFR flight following is not required if already in contact with the destination's control tower.

6.1.2.2. **IFR.** Pilots shall obtain ATC clearance before an IFR departure (or as soon as practicable after departure while maintaining VMC) or before entering controlled airspace (T-0).

6.2. Minimum Aircraft Altitude.

6.2.1. **VFR.** In the NAS, fly appropriate VFR hemispheric altitudes when higher than 3,000 ft above ground level (AGL), unless authorized by ATC (T-0). Do not apply these altitudes when turning or holding in a holding pattern of 2 minutes or less (T-0). Outside the NAS, fly altitudes or flight levels as specified in FLIP (T-0).

6.2.2. **IFR.** Except when necessary for takeoff, landing, or when being vectored by ATC, do not fly lower than:

6.2.2.1. On Airways, no lower than any published minimum for the airway (T-0).

6.2.2.2. Off Airways, no lower than:

6.2.2.2.1. The Off Route Obstacle Clearance Altitude (OROCA) (T-1);

6.2.2.2.2. The Off Route Terrain Clearance Altitude (ORTCA) (T-1); or,

6.2.2.2.3. An altitude that provides at least 1,000 ft. of clearance above all obstacles within 4 NMs of the course to be flown in non-mountainous terrain, or 2,000 ft. in mountainous terrain (T-0).

6.2.3. **Other Minimum Altitudes.** Except for MAJCOM-approved aerial demonstrations/events or during takeoff or landing, do not operate aircraft below an altitude that, should an emergency landing become necessary, creates undue hazard to persons or property (T-0).

6.2.3.1. **Military Routes and Special Use Airspace (SUA).** Adhere to minimum altitudes published in FLIP AP for all military routes and special use airspace (e.g., restricted airspace, military operations areas (MOAs), slow speed training routes (SR), IFR military training routes (IR), VFR military training routes (VR), and controlled firing areas) (T-0).

6.2.3.1. **(ACC)** Minimum terrain following altitudes and altitudes suitable for flight in IMC for IFR operations on published low level routes will be IAW FLIP and applicable AFI/AFMAN 11-2 MDS-Specific, Volume 3.

6.2.3.1.1. Any aircraft operation within a restricted area which is approved by the using agency and coordinated with the controlling ATC agency may deviate from restrictions listed in **paragraphs 6.2.3.2** through **6.2.3.4** if they are not compatible with the operation of the aircraft and create the same hazards as the operations for which the restricted area was designated.

6.2.3.2. **Non-congested Areas.** Operate over non-congested areas at an altitude at or above 500 ft AGL except over open water or in sparsely populated areas (T-0). Under such exceptions, do not operate aircraft closer than 500 ft. to any person, vessel, vehicle, or structure (T-0). Helicopters in FAA airspace or operating IAW host-nation agreements may operate at lower altitudes and in closer proximity if they do not create a hazard to persons or property on the surface.

6.2.3.3. **Congested Areas.** Operate over congested areas (e.g., cities, towns, settlements) or groups of people at an altitude which ensures at least 1,000 ft. above the highest obstacle within a 2,000-ft. radius (T-0). Helicopters in FAA airspace or operating IAW host-nation agreements may operate at lower altitudes and in closer proximity if they do not create a hazard to persons or property on the surface.

6.2.3.4. **Flight over National Recreation Areas and Wildlife Refuges.** Operate no less than 2,000 ft. AGL (mission permitting) over National Park Service monuments, seashores, lake shores, recreation and scenic riverways; US Fish and Wildlife Service refuges; and US Forest Service wilderness and primitive areas (T-1). Specific areas may require higher altitudes (see FLIP and sectional aeronautical charts).

6.2.3.5. **Disaster Areas.** Do not operate within designated disaster areas unless the aircraft is assisting in disaster relief efforts (T-0). If the mission requires operation within disaster relief areas, the following procedures must be followed:

6.2.3.5.1. For disaster areas declared to protect persons and property on the surface or in the air from a hazard associated with an incident on the surface, do not fly within the designated area unless participating in hazard relief activities and operating under the direction of the official in charge of on-scene emergency response activities (T-0).

6.2.3.5.2. For disaster areas declared to provide a safe environment for the operation of disaster relief aircraft or to prevent an unsafe congestion of sightseeing aircraft above an incident which may generate a high degree of public interest, do not fly within the designated area unless at least one of the following conditions are met (T-0):

6.2.3.5.2.1. The aircraft is participating in hazard relief activities and is being operated under the direction of the official in charge of on-scene emergency response activities (T-0).

6.2.3.5.2.2. The aircraft is operating under an ATC approved IFR flight plan (T-0).

6.2.3.5.2.3. The operation is conducted directly to or from an airport within the area, or is necessitated by the impracticability of VFR flight above or around the

area due to weather or terrain; notification is given to the Flight Service Station (FSS) or ATC facility specified in the NOTAM to receive advisories concerning disaster relief aircraft operations; and the operation does not hamper or endanger relief activities and is not conducted for purpose of observing the disaster (T-0).

6.3. Aircraft Speed.

6.3.1. **Supersonic Flight.** Do not operate aircraft at or above Mach l except as specified in AFI 13-201, *Airspace Management* (T-1). See same guidance if inadvertent flight occurs above Mach 1.

6.3.2. In the NAS:

6.3.2.1. Do not exceed 200 knots indicated airspeed (KIAS) at or below 2,500 ft. AGL within 4 NM of the primary airport in Class C or Class D airspace unless authorized by ATC or required to maintain the minimum operating airspeed specified in the aircraft T.O. (T-0).

6.3.2.2. Do not exceed 200 KIAS in the airspace underlying Class B airspace or in a VFR corridor designated through Class B airspace unless required to maintain the minimum operating airspeed specified in the aircraft T.O. (T-0).

6.3.2.3. Do not exceed 250 KIAS below 10,000 ft. MSL (T-0). MAJCOMs may approve operations exceeding 250 KIAS below 10,000 ft. MSL:

6.3.2.3.1. Within restricted areas or MOAs.

6.3.2.3.2. Within DoD/FAA mutually developed instrument routes or DoD developed visual routes. (Do not exceed 250 KIAS on slow speed training routes (SR)).

6.3.2.3.3. Within unpublished DoD- and FAA-designated areas or routes. This provision is intended to accommodate speed requirements, as necessary to accomplish the national defense mission, on an interim basis until the area/route can be published.

6.3.2.3.4. During large-scale exercises or short-term special missions with appropriate coordination to ensure awareness of the nonparticipating flying public.

6.3.2.3.5. When the aircraft T.O. requires a higher airspeed. If the airspeed in the T.O. is listed as a range, fly the slowest practical speed in that range. MAJCOM supplements or MDS-specific guidance do not constitute the aircraft T.O.

6.3.3. **Outside the NAS.** Do not exceed 250 KIAS below 10,000 ft. MSL unless: in international airspace and mission requirements dictate, ICAO/host-nation rules permit, or necessary to maintain the minimum safe airspeed in the aircraft T.O. (T-0).

6.3.4. **Holding.** Conduct holding at airspeeds prescribed in FLIP or MDS-specific guidance (T-0).

6.4. Hazard Avoidance.

6.4.1. **Hazardous Weather.** Use all available information to avoid hazardous weather.

6.4.1.1. **"Severe" Conditions.** Do not operate in any forecast or actual severe condition (e.g. severe icing, turbulence) (T-2). See AFH 11-203, *Weather for Aircrews*, for detailed information.

6.4.1.2. **Thunderstorms.** Do not intentionally fly into a thunderstorm (T-2). Damaging lightning strikes, electrostatic discharges, and hail encounters can occur in apparently benign conditions. Do not fly in IMC in the vicinity of actual thunderstorms without operable weather radar (T-2).

6.4.2. **Volcanic Activity.** Unless conducting rescue operations, do not operate within 50 NM of known or reported hazardous volcanic ash (T-2). MAJCOMs may issue guidance on operations including procedures for inadvertent ash encounters and avoidance criteria.

6.4.2.1. Consult an authorized weather source for current Volcanic Ash Advisory Center (VAAC) ash cloud information (or significant meteorological information (SIGMET)) (T-2). If unable to contact an authorized weather source, consider areas depicted on VAAC charts (or SIGMETs) as hazardous. Encounters with volcanic ash will be reported as soon as possible to the controlling agency and aircraft maintenance authorities (T-2). Report volcanic ash encounters to pilot-to-metro service (PMSV) or other weather agencies to ensure rapid dissemination (T-0). See PIREP procedures in the FIH.

6.4.3. **Bird Watch Condition (BWC).**

6.4.3.1. **BWC MODERATE** . Operational commanders will consider restricting formation departures, approaches, and pattern work. To increase the chances of seeing and avoiding birds, avoid hard turns or excessive climb angles. During BWC Phase II periods (see AFI 91-202), accomplish one approach to a full stop unless mission needs warrant additional approaches and sufficient fuel exists to divert if BWC changes to SEVERE (T-3).

6.4.3.2. **BWC SEVERE** . Do not conduct flight operations except in an emergency without OG/CC approval. Arriving aircraft should either hold awaiting a lower BWC or divert (T-3).

6.4.3.3. **Civil or Foreign Fields** . Follow BWC MODERATE procedures if receiving a civilian ATC/Automatic Terminal Information Service (ATIS) hazard advisory to use caution for birds in the vicinity (T-3).

6.4.3.4. NATO countries may use a numerical system to report BWC (see NATO STANAG 3879). Use this intensity conversion: 0-4 for Low, 5 for Medium, 6-8 for Severe. Risk warning updates for NW Europe are available at **https://www.notams.jcs.mil/common/birdtam.html**

6.5. Flight in Extreme Barometric Pressures. If unable to display proper altimeter setting (i.e. barometric pressure is lower than 28 or higher than 31 inches of mercury), obtain operations group commander approval for sustained flight in IMC below FL180. See AIM for more information.

6.6. Flight in Colder Than International Standard Atmosphere (ISA) Temperatures. If the air temperature at altitude is lower than ISA, true altitude will be lower than indicated by the barometric altimeter.

6.6.1. In the absence of MAJCOM guidance, when flying IFR, or VFR at night (unaided), over mountainous terrain with the outside air temperature (OAT) colder than ISA minus 10°C, plan to fly at least 1,000 ft above published minimum altitudes obtained from terrain and IFR enroute charts (e.g. minimum enroute altitudes (MEA), minimum obstruction clearance altitudes (MOCA), OROCAs or other minimum safe altitudes during low-levels).

MAJCOM/A3s may publish alternate MDS-specific guidance for aircraft that are equipped to measure and display true altitude with the OAT colder than ISA minus 10°C.

6.7. Communications.

6.7.1. **Emergency Frequencies.** If suitably equipped, monitor at least one emergency frequency at all times as mission and operational conditions permit (T-1). Report distress or emergency locator transmitter (ELT) transmissions to ATC (T-1).

6.8. RNAV and RNP Operations.

6.8.1. **Navigation Database Operations** .

6.8.1.1. Do not modify database waypoints or insert user-defined waypoints on RNAV, RNP, etc. routes or procedures except to change altitude and/or airspeed to assist in complying with an ATC instruction (T-0). Systems which allow additional waypoints on the track may be used.

6.8.1.2. Crosscheck the cleared flight plan against current FLIP, the navigation system textual display, and aircraft map display (if applicable) (T-0). Include confirmation of waypoint sequence, reasonability of track angles and distances, altitude or speed constraints, and identification of fly-by or fly-over waypoints (T-0). Do not execute any procedure for which there is doubt about validity of the navigation database or publications (T-0).

6.8.2. **Random RNAV in the NAS** . Radar monitoring is required on all unpublished (random) RNAV routes (T-0). Refer to FLIP GP.

6.8.3. **Published RNAV routes (Q or T routes)** . If RNAV routes cannot be retrieved from the database, selecting and inserting ALL of the named fixes from the database is permitted.

6.8.4. **Use of RNAV Systems on Conventional Routes and Procedures.** Suitable RNAV systems may be used as a substitute or alternate means of navigation on conventional routes and procedures. MAJCOMs reference FAA Advisory Circular (AC) 90-108, *Use of Suitable Area Navigation (RNAV) Systems on Conventional Routes and Procedures*, and provide operational guidance. Outside the NAS, comply with host-nation/oceanic procedures (T-0).

6.8.4.1. MAJCOMs may approve the use of other RNAV systems (i.e. not "suitable" as defined in AC 90-108) to enhance IFR navigation on conventional routes and procedures. Underlying conventional NAVAIDS/routes/procedures must be tuned and monitored (T-0).

6.8.4.2. "Alternate means" refers to using a suitable RNAV system in lieu of operable conventional NAVAIDS or installed and operable avionics. "Substitute means" refers to using a suitable RNAV system in lieu of out-of-service conventional NAVAIDS or non-installed/non-operable avionics.

6.8.4.3. The following uses are prohibited:

6.8.4.3.1. Substitution for the final approach segment of a VOR/TACAN/NDB approach (T-0).

6.8.4.3.2. Navigation on LOC-based courses (including LOC back-course guidance) without monitoring the raw LOC data (T-0).

6.8.4.3.3. Navigation with DME/DME/IRU systems (without GNSS/WAAS input) unless specifically authorized by NOTAM or FAA guidance (T-0).

6.8.4.3.4. Use of a procedure identified as "NA" without exception by a NOTAM (T-0).

6.8.4.4. Except as prohibited, either substitute or alternate means of navigation may be used as follows:

6.8.4.4.1. Determine position relative to or distance from a VOR, TACAN, NDB, compass locator, or DME fix.

6.8.4.4.2. Determine position relative to or distance from a named fix defined by the intersection of a radial/bearing/course of a VOR/LOC/TACAN/NDB/compass locator.

6.8.4.4.3. Navigate to/from a VOR/TACAN/NDB/compass locator.

6.8.4.4.4. Hold over a VOR/TACAN/NDB/compass locator, or DME fix.

6.8.4.4.5. Fly an arc based upon DME.

6.8.4.5. **Operating Requirements and Considerations** .

6.8.4.5.1. Retrieve all NAVAIDS, fixes, and procedures from a current navigation database (T-0).

6.8.4.5.2. Tune, identify, monitor, and display the appropriate ground-based NAVAIDs whenever practicable (T-0).

6.8.4.5.3. Notify ATC when substituting for an out-of-service NAVAID (T-0).

6.9. Performance-Based Operations. Performance-based operations may be based on performance of a combination of navigation, communications, and/or surveillance capabilities (e.g., Required Navigation Performance (RNP)).

6.9.1. Do not execute performance-based operations (airspace/routes/procedures) without specific approval (T-2). MAJCOMs will publish special conditions or limitations associated with each performance-based airspace or procedure.

6.9.2. Follow equipment requirements and/or limitations published in FLIP (T-0).

6.9.3. Advise ATC if an equipment failure or other malfunction results in the loss of aircraft capability to continue operations (T-0).

6.9.4. When unable to comply with performance-based operations, revise the route or delay the operation (T-0).

6.10. Legacy Special Civil Airspace Requirements.

6.10.1. **Minimum Navigation Performance Specifications (MNPS) Airspace.** MAJCOMs must provide approval and guidance for operations in MNPS Airspace. Comply with applicable FLIP area planning documents (T-0). HQ USAF/A35, through HQ AFFSA/XOF (**hqaffsa.xof@us.af.mil**), must approve waivers to the requirements of North Atlantic Track Minimum Navigation Performance Specifications (NAT MNPS) and/or Canadian Minimum Navigation Performance Specifications (CMNPS) airspace.

6.10.1. **(ACC)** ACC aircraft or aircraft under ACC oversight will document appropriate airspace certifications (MNPS, RVSM, RNP RNAV) in AFI/AFMAN 11-2 MDS Specific Volumes 3, as supplemented, aircraft T.O.s, or on the ACC/A3TV website via HHQ Message. Once this certification is documented, aircraft may operate IAW appropriate civil procedures. Units will develop training programs to ensure aircrews are aware of any special conditions or procedures associated with operations in the airspace.

6.10.2. **Reduced Vertical Separation Minimums (RVSM) Airspace.** Unless specifically cleared by ATC, do not operate in RVSM airspace without functional RVSM equipment (T-0). Comply with applicable FLIP area planning documents (T-0). Notify ATC as soon as possible if required equipment fails after entering RVSM airspace (T-0).

6.11. VFR Flight. When in FAA airspace, adhere to the weather minimums listed in Table 6.1. (T-0). When outside of FAA airspace, comply with guidance in FLIP, FCG, or the ICAO VFR weather minimums depicted in **Table 6.2**. (T-0). When operating under VFR, aircrews must be able to control the aircraft by referencing visual cues from a discernible horizon regardless of cloud clearance requirements (T-0).

6.11.1. Before transition from IFR to VFR, establish appropriate visibility and cloud clearances IAW **Table 6.1** or **6.2**. (T-0).

6.11.2. During transition from VFR to IFR, maintain appropriate visibility and cloud clearance requirements to a minimum IFR altitude until receipt of the IFR clearance (T-0).

6.11.3. Do not operate beneath the ceiling under VFR within the lateral boundaries of controlled airspace designated to the surface for an airport when the ceiling is less than 1,000 feet (T-0).

Table 6.1. NAS VFR Cloud Clearance and Visibility Minimums (T-0).

FAA Airspace Class	Prevailing or Flight Visibility	Distance from Cloud
Class A	Not Applicable	Not Applicable
Class B	3 SM	Clear of Clouds
Class C and Class D	3 SM	500 ft. below, 1,000 ft. above, and 2,000 ft. horizontal
Class E and G (Fixed-wing) Below 10,000 ft. MSL	3 SM	500 ft. below, 1,000 ft. above, and 2,000 ft. horizontal
Class E and G (Fixed-wing) At or above 10,000 ft. MSL	5 SM	1,000 ft. below, 1,000 ft. above, and 1 SM horizontal
Class E (Helicopter) Below 10,000 ft. MSL	3 SM	500 ft. below, 1,000 ft. above, and 2,000 ft. horizontal

Class E (Helicopter) At or above 10,000 ft. MSL	5 SM	1,000 ft. below, 1,000 ft. above, and 1 SM horizontal
Class G (Helicopter) Below 1,200 ft. AGL	Day: 1/2 SM Night: 1 SM	Clear of clouds if operated at a speed that allows the pilot adequate opportunity to see any air traffic or obstructions in time to avoid a collision.
Class G (Helicopter) Above 1,200 ft. AGL and Below 10,000 ft. MSL	Day: 1 SM Night: 3 SM	500 ft. below, 1,000 ft. above, and 2,000 ft. horizontal
Class G (Helicopter) Above 1,200 ft. AGL and Above 10,000 ft. MSL	5 SM	1,000 ft. below, 1,000 ft. above, and 1 SM horizontal
NOTE: *When permitted by MAJCOM and ATC, helicopters, IAW SVFR, may operate in lower visibility conditions, if maneuvered at a speed that will give adequate opportunity to observe other traffic or any obstacles in time to avoid a collision.*		

Table 6.2. ICAO VFR Cloud Clearance and Visibility Minimums (T-0).

ICAO Airspace Class	Flight Visibility	Distance from Cloud
Class A	Not Applicable	Not Applicable
Class B	8 KMs above 10,000 ft. MSL 5 KMs below 10,000 ft. MSL	Clear of clouds
Class C, D, and E	Same as Class B	1,500 m horizontal 300 m (1,000 ft.) vertical
Class F and G (Fixed-wing) Above 900 m (3,000 ft.) MSL or above 300 m (1,000 ft.) above terrain, whichever is higher	Same as Class B	Same as Class C, D, and E.
Class F and G (Fixed-wing) At and below 900 m (3,000 ft.) or 300 m (1,000 ft.) above terrain whichever is higher	5 KMs	Same as Class C, D, and E.
Class F (Helicopter) Above 900 m (3,000 ft.) or 300 m (1,000 ft.) above terrain whichever is higher	8 KMs above 10,000 ft. MSL 5 KMs below 10,000 ft. MSL	1,500 m horizontal 300 m (1,000 ft.) vertical.
Class F and G (Helicopter) At and below 900 m (3,000 ft.) or 300 m (1,000 ft.) above terrain whichever is higher	5 KMs (See NOTE)	Clear of cloud and in sight of the surface.

Class G (Helicopter) Above 900 m (3,000 ft.) or 300 m (1,000 ft.) above terrain whichever is higher	8 KMs above 10,000 ft. MSL 5 KMs below 10,000 ft. MSL	1,500 m horizontal 300 m (1,000 ft.) vertical
NOTE: *When permitted by MAJCOM and ATC, helicopters, IAW SVFR, may operate in lower visibility conditions, if maneuvered at a speed that will give adequate opportunity to observe other traffic or any obstacles in time to avoid a collision.*		

Chapter 7

ARRIVAL

7.1. Weather.

7.1. (ACC) DELETED

7.1.1. **Destination Weather Update.** Obtain the latest destination airport conditions prior to beginning descent or commencing an approach (T-1).

7.1.2. **Required Approach Minimums.** Do not begin a descent if destination weather is below the following required landing minimums:

7.1.2. **(ACC)** Fighter/ MQ-9 pilots must have ceiling and visibility minimums for the applicable pilot weather category (**Table 7.6**) or published minimums, whichever is higher, to start an enroute descent or published approach.

7.1.2.1. For a straight-in or sidestep approach, the required visibility minimums (T-1).

7.1.2.2. For a circling approach, both the required ceiling and visibility minimums (T-1).

7.1.2.3. **(Added-ACC)** NAOC weather minimums for training sorties are as published, but will be no lower than 200 feet ceiling/2400 RVR. The full stop landing may use visibility only criteria to published minimums or 2400 RVR (800 m), whichever is greater.

7.1.3. **Changes to Weather During Arrivals.** If the reported weather decreases below minimums after starting a descent, receiving radar vectors for an approach, or established on any segment of an approach prior to the missed approach point (MAP), the approach may be continued to the MAP and either execute a missed approach or continue to land if conditions in **paragraphs 7.5.2** and **7.5.3** are met.

7.1.3. **(ACC)** Fighter/MQ-9 pilots will consider weather below minimums when reported weather is below either the ceiling or visibility of the pilot's weather category or published minimums, whichever is higher.

7.1.4. **Approach or Landing Near Hazardous Weather.** Do not fly an approach or land at an airport where thunderstorms or other hazardous conditions are producing hail, strong winds, gust fronts, heavy rain, lightning, wind shear, or microbursts (T-2).

7.1.5. **Landing Criteria.**

7.1.5. **(ACC)** ACC aircrews are authorized to fly Category 1 ILS approaches IAW with this paragraph and **7.1.5.1.1**.

7.1.5.1. **Fixed-Wing.** MAJCOMs may authorize Category I Instrument Landing System (ILS) approaches to less than 2400 RVR at locations without Touchdown Zone/Centerline Lighting (TDZ/CL) (or when such system is inoperative) provided the approach is flown using guidance from an approved flight director, heads-up display (HUD), or coupled to an autopilot flown to a Decision Altitude (DA). In addition to MAJCOM approval, authorization must be stated on the instrument approach procedure (IAP) or be published in the inoperative components or visual aids table of the TPP (T-0).

7.1.5.1.1. **Category I (1800 RVR or greater)** . Touchdown zone RVR must be equal to or greater than the specified minimums on the IAP (T-0).

7.1.5.1.2. **Category II (1200 to less than 1800 RVR)** . Touchdown zone RVR must be equal to or greater than the specified minimums on the IAP (T-0).

7.1.5.1.3. **Category III (RVR less than 1200)** . Touchdown, midfield, and rollout RVR must be equal to or greater than the specified minimums on the IAP (T-0). MAJCOMs will publish Category III RVR requirements if applicable.

7.1.5.2. **Helicopter.** Category A minimums may be used regardless of approach speed. Additionally, visibility minimums may be reduced by one-half, but no lower than 1/4 SM PV or 1,200 ft. RVR (T-0). Apply any inoperative approach lighting visibility correction before reducing minimums (T-0). Do not reduce the visibility minimums on Copter, Category II, Category III, and circling procedures; or if "Visibility Reduction by Helicopters NA" is annotated on the procedure (T-0). Apply airspeed limitations IAW **Table 7.1**. (T-0).

Table 7.1. Helicopter Use of Approach Procedures (T-0).

Procedure	Helicopter Visibility Minimums	Helicopter MDA/DA	Maximum Speed Limitations
Conventional (non-Copter)	The greater of: 1. one-half the Category A visibility minimums, or 2. ¼ SM visibility, or - 1200 RVR	As published for Category A	Initiate the final approach segment at speeds up to the upper limit of the highest Approach Category authorized by the procedure, but must be slowed to no more than 90 knots indicated airspeed (KIAS) at the missed approach point (MAP) in order to apply the visibility reduction.
Copter Procedure	As published	As published	90 KIAS when on a published route/track
Global Positioning System (GPS) Copter Procedure	As published	As published	90 KIAS when on a published route or track, EXCEPT 70 KIAS when on the final approach or missed approach segment and, if annotated, in holding. Military procedures are limited to 90 KIAS for all segments.

7.2. Cold Weather Altitude Corrections. Add the values derived from the FIH Temperature Correction Chart to the published procedure altitudes IAW **Table 7.2**. (T-0). Unless otherwise directed by MAJCOM, advise ATC if any applied correction exceeds 80 ft.

7.2. (ACC) Cold Weather Altitude Corrections. For aircraft either not equipped with a Flight Management System (FMS) or not equipped with an FMS capable of cold weather altitude calculations, reference **7.2**. for when to apply the corrections and the FIH.

7.2.1. Do not apply a temperature correction to an ATC-assigned altitude (T-0). Radar vectoring altitudes assigned by ATC in the NAS are not temperature compensated and may be queried or refused if obstacle clearance is in doubt.

Table 7.2. Cold Weather Altitude Corrections (T-1).

Altimeter Setting Source Temperature	Published IAP	IAP in mountainous terrain	If procedure turn or intermediate approach altitude on the IAP is ≥ 3000 ft above the altimeter setting source (N/A for High-Alt IAF or if only the missed approach altitude is ≥ 3000 ft)
At or Below 32° F / 0° C	Correct all altitudes inside FAF or below 1,000 ft. AGL	Correct all altitudes on the IAP	
At or Below -22°F / -30° C			
NOTE: *IAP includes minimum sector altitudes, missed approach altitudes, ESA, MSA, and DME arcs.*			

7.3. Types of Arrivals.

7.3.1. **Conventional Arrivals.** Fly these procedures using the appropriate conventional NAVAID(s) as the primary means of navigation except as authorized with approved RNAV equipment (T-0); see **paragraph 6.9**.

7.3.2. **RNAV/RNP/GNSS Arrivals.** Retrieve RNAV/RNP/GNSS procedures in their entirety by procedure name from a current navigation database and compare against approved publications (T-0).

7.3.3. **MAJCOM Certified Procedure.** Fly these procedures as authorized by the MAJCOM.

7.4. Types of Approaches.

7.4.1. **NDB/VOR/TACAN/ILS Approaches.** Fly these procedures using the appropriate conventional NAVAID(s) as the primary means of navigation except as authorized with approved RNAV equipment (T-0); see **paragraph 6.9**.

7.4.2. **RNAV/RNP/GNSS Approaches.** Retrieve RNAV/RNP/GNSS procedures in their entirety by procedure name from a current navigation database and compare against approved publications (T-0).

7.4.3. **Self-Contained Approaches (SCA).** SCAs are approved for IMC when developed by TERPS authority IAW AFI 11-230 and approved for use by the MAJCOM. When unable to develop a procedure IAW AFI 11-230 by a TERPS authority, see paragraph 7.4.6.

7.4.4. **Precision Runway Monitoring (PRM) Approaches.** Do not fly PRM approaches unless the aircrew and the aircraft are properly certified by the MAJCOM (T-0). If unable to accept a PRM approach clearance, contact Air Traffic Control System Command Center at 1-800-333-4286 to coordinate an arrival time. Without coordination, expect an ATC-directed divert to a non-PRM airport.

7.4.4.1. TCAS II equipped aircraft will fly the ILS PRM approach in TA/RA mode (T-0).

7.4.4.2. If an ATC breakout and a TCAS RA are received simultaneously, or shortly after one another, turns will be in accordance with ATC breakout instructions while vertical corrections will be in accordance with the TCAS system (T-0).

7.4.5. **Authorization Required Procedures.** Do not fly any RNP "Authorization Required", conventional "Special Authorization", or any procedure with a note requiring specific authorization without MAJCOM training and operational approval (T-0).

7.4.6. **MAJCOM Certified Procedure.** MAJCOM/A3s may develop and authorize an approach procedure for use in IMC for their aircraft. Complete MAJCOM-specific training before using such procedures (T-1). These procedures may be performed:

7.4.6. **(ACC) MAJCOM Certified Procedure.** ACC/A3 delegates approval authority to the OG/CC or equivalent commander of forces under their control to execute ACC-termed SCAs and IPRAs in IMC for combat, contingencies, and exercises.

7.4.6.1. With appropriate airspace authority approval (e.g. ATC, Airspace Control Order (ACO), host-nation agreement); or,

7.4.6.2. In conjunction with a compatible published instrument approach procedure; or,

7.4.6.3. In SUA; or,

7.4.6.4. Under VFR.

7.4.6.5. **(Added-ACC)** For ACC SCAs and IPRAs, the MDA/DA will be commensurate with aircraft equipage capabilities and mission requirements. The applicable obstacle clearance will be maintained until descent on the final approach segment. Crews initiating SCAs or IPRAs from tactical enroute altitudes will maintain no less than established tactical obstacle clearance as per MDS guidance until descent on the final approach segment.

7.4.6.6. **(Added-ACC)** ACC SCAs and IPRAs are a specialized operational mission capability similar to IMC terrain following and are not instrument related events that must be accomplished under IFR. Procedures for mission accomplishment of SCAs and IPRAs are published in MDS-specific operations procedures. If unable to comply with paragraph **7.4.6.6.1**, ACC crews will conduct SCAs or IPRAs in VMC or utilize procedures for IMC use IAW **7.4.6.7**.

7.4.6.6.1. **(Added-ACC)** Crew may conduct SCAs and IPRAs that closely follow published instrument approach ground tracks on operational or training missions flown under the following conditions:

7.4.6.6.1.1. **(Added-ACC)** Clear of clouds, with at least 1-statute mile flight visibility, able to continue to the destination airport and execute the SCA or IPRA missed approach under those conditions.

7.4.6.6.1.2. **(Added-ACC)** Reported ground visibility at the destination airport must be at least 1 SM.

7.4.6.6.1.3. **(Added-ACC)** Pilots planning a low approach, touch-and-go, or stop-and-go under IFR will obtain IFR climb out instructions prior to commencing the SCA or IPRA.

7.4.6.7. **(Added-ACC)** Requests to conduct SCAs or IPRAs in IMC will include the information specified in paragraph **7.4.6.5**. Submit IMC SCA or IPRA requests through the Stan/Eval channels to the OG/CC or equivalent.

7.4.7. **Radar approaches.** Fly these approaches as authorized by MAJCOM.

7.4.7. **(ACC)** ACC aircrews are authorized to fly published radar approaches (PAR and ASR) to all US military airfields and specially accredited airfields.

7.5. Approach Minimums.

7.5.1. **Determining Decision Height (DH)/Decision Altitude (DA)/Minimum Descent Altitude (MDA).** Determine minimum approach altitudes with the barometric altimeter except when directed by MAJCOM or aircraft T.O. guidance.

7.5.1. **(ACC)** Radar altimeters will not be used as sole source to determine MDA or DH/DA unless flying CAT II/III ILS-approaches.

7.5.1.1. **(Added-ACC)** Fighter/ MQ-9 pilots will reference the touchdown zone elevation (TDZE) or threshold elevation (THRE), whichever is published, for straight-in approaches and field elevation for circling approaches to determine pilot weather category minimum descent altitude or published minimums, whichever is higher. EXAMPLE: TDZE is 26 feet plus 500 feet pilot weather minimum equals 526 feet DH/MDA. Use field elevation if TDZE or THRE is unavailable. **(T-3).**

7.5.2. **Descent Below DH/DA/MDA.** Do not descend below DH/DA/MDA until sufficient visual reference with the runway environment has been established and in a position to execute a safe landing (T-2).

7.5.3. **Descent Below 100 ft.** Do not descend below 100 ft. above the threshold elevation (THRE) or touchdown zone elevation (TDZE) using the approach lights as a reference unless the red termination bars or the red side row bars are visible and identifiable (N/A on CAT III approaches) (T-2).

7.6. Inoperative Approach Lighting System (ALS). Unless **paragraph 3.16.1** applies, when the runway ALS (or any portion, but not including sequenced flashers or visual glide slope indicators) as depicted on the procedure is inoperative, increase the published visibility minimums of an instrument approach by one of the following:

7.6.1. As directed by the inoperative components table in the TPP (T-0); or,

7.6.2. As stated on IAP, NOTAMs, ATIS, or other airport information source (T-0); or,

7.6.3. If no other guidance is provided, increase published visibility by ½ mile (T-0).

7.7. Landing Gear Reporting Procedures. Retractable gear aircraft will report gear down status to ATC or runway supervisory unit after extending the landing gear (T-2). This report shall be made during any approach prior to crossing the runway threshold (T-2).

7.8. Missed Approach.

7.8.1. **Executing the Missed Approach.** If at the MAP/DH/DA and not in a position to execute a safe landing, immediately execute the appropriate missed approach procedure or ATC-issued climbout instructions (T-2). If beyond the MAP/DH/DA, coordinate with ATC for climb-out instructions (T-1).

7.8.1.1. The missed approach procedure should not be initiated until over the MAP/DH/DA unless otherwise cleared by ATC. Climbing prior to the MAP/DH/DA is permitted, but ATC should be advised as soon as practical.

7.8.1.2. During an emergency, if unable to comply with the missed approach routing or climb requirements, coordinate alternate climbout instructions to ensure obstacle clearance.

7.8.2. **Missed Approach Climb Performance.** Prior to starting any instrument approach, ensure compliance with the following missed approach climb gradients:

7.8.2.1. Climb performance must meet or exceed 200 ft/NM or the published missed approach climb gradient, whichever is higher, to an appropriate IFR altitude (T-0).

7.8.2.2. **Multi-Engine Fixed-Wing Aircraft.** Ensure the aircraft can meet 200 ft/NM or the published missed approach climb gradient, whichever is higher, to an appropriate IFR altitude with OEI (T-2).

7.8.2.2.1. If unable to meet published missed approach climb gradient OEI, and operationally necessary, the MAJCOM/A3 may authorize subtraction of up to 48’/NM from the missed approach climb gradient.

7.8.2.2.1. **(ACC)** ACC /A3 authorizes the subtraction of up to 48’/NM from the missed approach climb gradient for operational necessity. **(T-3).**

7.8.2.3. **Helicopter.** Climb performance must meet or exceed 200 ft/NM or the published missed approach climb gradient, whichever is higher, to an appropriate IFR altitude which ensures obstacle clearance; or meet 400 ft/NM for “Copter Only” approaches (T-0).

7.9. Land and Hold Short Operations (LAHSO). Fixed-wing pilots are prohibited from accepting LAHSO clearances (T-2).

7.9.1. Aircrews may passively participate in LAHSO (land or take-off when another aircraft has been given a LAHSO clearance). The PIC is the final authority whether to take-off, land, or continue a touch-and-go when a merging aircraft has received a LAHSO clearance.

7.10. Reduced Same Runway Separation (RSRS). MAJCOMs may approve non-formation RSRS operations. Host ATC and user units will publish RSRS procedures (T-2). MAJCOM approval shall include MDS-specific RSRS criteria governing similar and dissimilar landing/touch-and-go/low approach operations.

7.10.1. **(Added-ACC)** Wings may authorize RSRS to maximize runway acceptance rates. ACC bases are authorized to use the following RSRS standards between ACC aircraft when

air traffic controllers are able to see the aircraft involved and determine distances by references to suitable landmarks. The OG/CC will establish procedures based on the guidance below: **(T-3).**

7.10.1.1. **(Added-ACC)** Deployed aircraft are authorized RSRS if a letter of agreement is signed between the host wing and deployed unit. Host wings will ensure a detailed briefing is conducted prior to local flying. **(T-3).**

7.10.1.2. **(Added-ACC)** Tenant units may accept host base RSRS standards that are not less than specified in this paragraph.

7.10.1.3. **(Added-ACC)** The OG/CC ensures assigned military aircrews and supporting air traffic controllers are thoroughly familiar with authorized RSRS standards. Any aircrew or controller may refuse reduced separation. When RSRS is refused, FAA JO 7110.65 separation standards apply.

7.10.1.4. **(Added-ACC)** RSRS during wet runway operations must be defined based upon local runway surface conditions and operational needs.

7.10.1.5. **(Added-ACC)** RSRS is approved for formation flights.

7.10.1.6. **(Added-ACC)** See **Table 7.3** and **Table 7.4** for fighter type aircraft RSRS criteria, and **Table 7.5** for C-130 RSRS criteria.

7.10.1.7. **(Added-ACC)** Non-fighter RSRS:

7.10.1.7.1. **(Added-ACC)** The minimum RSRS when either aircraft is a RC-135/E-3/E-8 or heavy class aircraft is 8,000 feet and dry runway conditions.

7.10.1.7.2. **(Added-ACC)** Helicopters will operate IAW 11-2MDSv3.

7.10.1.8. **(Added-ACC)** RSRS is not authorized for a touch and go behind a full stop or low approach behind a touch and go when either aircraft is a heavy class aircraft.

7.10.1.9. **(Added-ACC)** RSRS standards do not apply:

7.10.1.9.1. **(Added-ACC)** To any situation involving an emergency aircraft.

7.10.1.9.2. **(Added-ACC)** To any situation involving an aircraft cleared for the option.

7.10.1.9.3. **(Added-ACC)** When the runway condition reading (RCR) is less than 12 or braking action reports of less than fair are reported.

7.10.1.10. **(Added-ACC)** RSRS criteria are based on aircraft characteristics, aircrew training requirements and the responsible air traffic controller's ability to ensure application of established separation.

7.10.1.11. **(Added-ACC)** Unit level application of RSRS may be developed by affected air traffic control personnel and user units; specifically outlined in either the base airfield operations instruction or a wing operations letter and approved by the host base MAJCOM prior to implementation.

7.10.1.12. **(Added-ACC)** All aircraft must maintain at least 500 feet lateral or vertical separation when over flying aircraft on the runway. Responsibility for separation rests with the pilot.

7.10.1.13. **(Added-ACC)** C-130s are authorized the following RSRS:

7.10.1.13.1. **(Added-ACC)** Full stop/low approach behind base assigned aircraft (excluding other C-130): 8,000 feet.

7.10.1.13.2. **(Added-ACC)** Base assigned aircraft (excluding other C-130) full stop/low approach behind a C-130: 8,000 feet.

7.10.1.13.3. **(Added-ACC)** See **Table 7.5** for C-130 to C-130 operations (day and night).

Table 7.3. (Added-ACC) RSRS for Similar Fighter Type Aircraft (i.e., F-15C to F-15E, etc.).

		Lead Aircraft		
		Full Stop	**Touch & Go**	**Low Approach**
Trail Aircraft	**Full Stop**	3,000' or 6,000' behind a Formation landing	3,000'	3,000'
	Touch & Go	6,000' if day/night, VFR, and Dry*	3,000'	3,000'
	Low Approach	3,000'*	6,000'	3,000'
NIGHT: 6,000' is the minimum spacing for all similar night operations if ATC can safely determine distances; otherwise standard FAAO 7110.65 separation standards will apply. *Low Approach (LA) or Touch & Go (TG) behind a Full Stop (FS): For all situations involving LA or TG behind a FS, aircraft will not overfly aircraft on runway. Responsibility for ensuring compliance rests with the pilot. RSRS is measured between the trailing aircraft in the lead flight and the lead aircraft in the trailing flight.				

Table 7.4. (Added-ACC) RSRS for Dissimilar Fighter Type Aircraft (i.e. any mix of different airframes, F-15 to F-16, etc.).

		Lead Aircraft		
		Full Stop	**Touch & Go**	**Low Approach**
Trail Aircraft	**Full Stop**	6,000' or 8,000' behind a Formation landing	6,000'	6,000'
	Touch & Go	6,000'*	6,000'	6,000'
	Low Approach	6,000'*	6,000'	6,000'
NIGHT: 8,000' is the minimum spacing for all dissimilar night operations if ATC can safely determine distances; otherwise standard FAAO 7110.65 separation standards will apply.				

*Low Approach (LA) or Touch & Go (TG) behind a Full Stop (FS): For all situations involving LA or TG behind FS, aircraft will not overfly aircraft on the runway. Responsibility for ensuring compliance rests with the pilot.

RSRS is measured between the trailing aircraft in the lead flight and the lead aircraft in the trailing flight.

Table 7.5. (Added-ACC) RSRS for C-130 to C-130 Operations (Day or Night).

		Lead Aircraft		
		Full Stop	**Touch & Go**	**Low Approach**
Trail Aircraft	**Full Stop**	5,000’ or 8,000’ for formation landings*	5,000’	5,000’
	Touch & Go	Not Authorized	5,000’	5,000’
	Low Approach	5,000’*	Not Authorized	5,000’

*8,000’ is the minimum spacing for a single aircraft landing behind a formation full stop.

RSRS is measured between the trailing aircraft in the lead flight and the lead aircraft in the trailing flight.

7.11. Helicopter Landing Areas. Helicopters may operate from/to other than established landing areas (e.g., fields, highways, parks) if conducting an operational or training mission. For training missions, permission must be received to use the area and safeguards must exist to permit operations without hazard to persons or property (T-3).

7.12. Landing With Hot Armament. MAJCOMs will ensure units publish procedures for aircraft operations with hot armament.

7.12.1. Before landing with hot armament or practice munitions at any airfield where such procedures are unfamiliar, aircrew must:

7.12.1.1. Advise the tower of the circumstances (T-0);

7.12.1.2. Advise transient alert and other appropriate agencies (T-0); and,

7.12.1.3. Request taxi instructions to a designated safe (de-arm) area (T-0).

7.12.2. After landing, aircrew must:

7.12.2.1. Avoid taxiing into an area that could threaten personnel or equipment (T-0).

7.12.2.2. Ensure the ground crew is aware of the armament onboard (T-0); and,

7.12.2.3. Request assistance from the nearest DoD facility, if necessary.

7.12. (ACC) Landing With Hot Armament. Units will develop and follow local procedures for handling aircraft landing with hot armament to be published in the local supplement to the AFI/AFMAN 11-2 MDS-Specific Volume 3 and the base-specific Instruction 11-250 (if applicable).

7.13. Touch-and-Go Landings. MAJCOMs will publish guidance addressing operating conditions and qualifications.

7.13.1. **(Added-ACC)** OG/CCs for fighter units conducting intentional touch-and-go landings outside of approved training syllabi or functional/operational test flights will provide written guidance to aircrews addressing at least the following:

7.13.1.1. **(Added-ACC)** Weather minimums: ceiling, visibility, and crosswinds limits.

7.13.1.2. **(Added-ACC)** Runway condition.

7.13.1.3. **(Added-ACC)** Bird condition.

7.13.1.4. **(Added-ACC)** A no-later-than distance to initiate takeoff.

7.13.1.5. **(Added-ACC)** Measures to reduce risk of tire failure. At a minimum, specify:

7.13.1.5.1. **(Added-ACC)** Preflight tire condition.

7.13.1.5.2. **(Added-ACC)** Maximum number of touch-and-go landings per sortie.

7.13. (ACC) Touch-and-Go Landings. ACC aircraft or aircraft under ACC oversight may perform touch-and-go landings. The intent of intentional touch-and-go landings accomplished outside of approved training syllabi or functional/operational test flights is to improve aircrew skill and decision making during the landing/takeoff phases of flight. See appropriate AFI/AFMAN 11-2 MDS-Specific series for additional restrictions, limitations and procedures along with the following guidance:

7.14. Turns after Touch-and-Go or Low Approach. When operating IFR, do not turn after a touch-and-go or low approach until at least 400 ft. above the DER elevation, at a safe airspeed, and past the end of the runway (if visible) unless specifically cleared by the controlling agency, required by a published procedure, or when executing a closed pattern (T-1).

7.15. Traffic Pattern Procedures.

7.15.1. Fly traffic patterns IAW with control tower instructions, local flying procedures, AFMAN 11-217 series, or FLIP (T-0).

7.15.2. At airports with no control tower, follow the standard light signals or visual indicators that prescribe the direction of traffic and landing runway (T-0).

7.15.3. Helicopters should avoid the flow of fixed-wing aircraft unless operating at a compatible airspeed.

7.15.4. **(Added-ACC)** Formation landings by heavy class aircraft are not authorized without MAJCOM approval.

7.15.5. **(Added-ACC) [N/A Helicopters]** Takeoff should commence from the approach end of the runway. Aircraft subject to structural damage when taking off over an arresting gear cable may start takeoff immediately past the approach end arresting gear cable. Re-compute takeoff data for each new runway takeoff position**.**

7.15.6. **(Added-ACC) [N/A helicopters]** Plan to land within the designated touchdown zone of the runway. Aircraft subject to structural damage from landing roll over an arresting gear cable may land immediately past the approach end arresting gear cable. Aircraft will use

AFI/AFMAN 11-2MDS-Specific, Volume 3 and flight manual training series guidance when using this option.

7.15.6.1. **(Added-ACC)** ACC aircraft or aircraft under ACC oversight are prohibited from landing over a raised arresting barrier such as a MA-1A. This does not preclude landing over BAK 12/14 or other cables.

7.15.6.2. **(Added-ACC)** Do not fly ACC aircraft or aircraft under ACC oversight into arresting cables for practice or certification. Taxi engagements are authorized between 70 and 120 knots Ground Speed.

7.16. Practice Instrument Approaches Under VFR. MAJCOM approval is required to practice instrument approaches under VFR. The following restrictions apply:

7.16. (ACC) Practice Instrument Approaches Under VFR. Aircrews may fly practice instrument approaches under VFR IAW paragraph **3.31**. Air traffic controllers may not be required to provide IFR separation to VFR aircraft flying practice instrument approaches IAW FAA JO 7110.65. Controllers will advise the pilot when separation services are not provided.

7.16.1. Maintain VFR cloud clearances and visibilities IAW Tables 6.1 and 6.2 (T-0);

7.16.2. Use terminal radar service when available (T-1);

7.16.3. Make all position reports IAW AFMAN 11-217 series (T-1); and

7.16.4. Request ATC clearance to fly the published missed approach (T-0).

7.17. Night VMC Approaches. In the absence of MAJCOM guidance, fly the most precise IAP available (T-1).

7.17.1. **(Added-ACC)** Fixed wing fighter, EC-130 and OC/RC/TC/WC-135 aircraft will comply with the following guidance:

7.17.1.1. **(Added-ACC)** Fighter/attack type aircraft (including T-38) will not perform night overheads unless required for formal training course, syllabus training, instructor proficiency or evaluation. (ANG: Units based at airfields which lack a precision/non-precision approach will develop an appropriate VFR procedure for NGB/A3 approval.)

7.17.1.2. **(Added-ACC)** If multiple night landings are required for formal training course or MDS-specific Vol 1 requirements, accomplish night touch and go training IAW paragraph **7.13.1** and its subparagraphs. When performing night touch and go training, an appropriate visual glide slope indicator or ILS glide slope information will be used to monitor glide slope position. **(T-3).**

7.17.2. **(Added-ACC)** At bases with limited instrument approaches/airfield lighting, the OG/CC will designate the minimum lighting/instrumentation required for safe night operations.

Table 7.6. (Added-ACC) Fighter/MQ-9 Pilot Weather Minimums.

Category	Requirements
Category 1	Previous AF Form 8 annotating evaluation to published precision approach minimums.

Category 2	Previous AF Form 8 annotating evaluation of a precision approach to 300’ ceiling / 1 SM (RVR 5000) visibility.
Category 3	Previous AF Form 8 annotating evaluation of a precision approach to 500’ ceiling / 1.5 SM (RVR 8000) visibility.
Category 4	Previous AF Form 8 annotating evaluation of a precision approach to 700’ ceiling / 2 SM visibility.
Category 5	Initial Qualification Training and Re-qualification Training students prior to a formal instrument (INST) evaluation.
NOTES: 1. This table applies to all ACC, AFRC and ANG pilots flying Fighter/ MQ-9 aircraft. Specific AFI/AFMAN 11-2 MDS-Specific Volumes 1 or 3 may dictate additional restrictions. The currencies on Table 7.7. must be used when they are more restrictive than those in MDS-Specific Volumes. Document pilot weather minimum categories in ARMS. 2. Cat 4 is the lowest category for a pilot with a valid Instrument (INSTM) Evaluation. 3. For formation approaches, the pilot weather minimums for the pilot with the most restrictive category applies. Formation landings are prohibited in all cases when the weather is less than 500 feet and 1 1/2 miles unless required to cope with an emergency situation. 4. Conduct night formation landings only to cope with emergency situations. The preferred method of recovery is to drop the wingman off while the leader executes a go-around. 5. Qualified pilots may be placed on air defense alert regardless of the pilot's weather category (applies only to fighters). When existing or forecast weather is below the pilot's weather minimum category, place the pilot on mandatory alert status or change out as required by NORAD Regulation (NR) 55-11 (Classified), NORAD Air Defense Fighter Alert (U). 6. If non-current in precision approaches, increase the pilot weather mins by one category. This increase is not cumulative, i.e. a Cat 2 pilot will never revert to a Cat 4 pilot due to non-currency. 7. The requirement for “Previous AF Form 8” annotations is not meant to mandate the re-writing of completed AF Forms 8. It is assumed that a pilot’s last INSTM evaluation included an evaluation of precision approach down to the minimums of that pilot at the time of the evaluation.	

Table 7.7. (Added-ACC) Pilot Weather Category Currencies.

PWC Category	Inexperienced (IAW AFI 11-2MDSV1)	Experienced (IAW AFI 11-2MDSV1)	To update currency, fly:	To regain currency, fly:
Category 1	7 days	14 days	a precision approach	a precision approach to minimums in actual IMC under IP supervision, or in an approved (by MDS Ready Aircrew Program (RAP) letter) simulator to minimums (in IMC), under IP supervision.

Category 2	14 days	45 days	a precision approach	**Inexperienced**: Fly a precision approach to PWC minimums in actual IMC under IP supervision, or in an approved (by MDS Ready Aircrew Program (RAP) letter) simulator to 300'/1 SM (in IMC), under IP supervision. **Experienced**: Fly a precision approach airborne or in an approved simulator.
Categories 3, 4	30 days	45 days	a precision approach	a precision approach airborne or in an approved simulator.
NOTES: 1. The currencies on this must be used when they are more restrictive than those in MDS-Specific Volumes 1. 2. For Cat 1 and inexperienced Cat 2 pilots, the normal method to regain currency is to accomplish an approach to IMC minimums in the simulator. The stipulation to regain currency in the aircraft is only meant to count an approach to minimums, if the weather happens to be at minimums while the pilot accomplishes an airborne approach under IP supervision.				

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Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

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FAA Advisory Circular 120-76C, *Guidelines for the Certification, Airworthiness, and Operational Use of Electronic Flight Bags*

FAA AIM *Aeronautical Information Manual*

FAA Joint Order 7400.2J *Procedures for Handling Airspace Matters*

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FAA Order 7110.118A *Land and Hold Short Operations (LAHSO)*

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SS521-AG-PRO-010 *U.S. Navy Diving Manual*

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T.O. 42C-1-2 *Anti-Icing De-Icing and Defrosting of Parked Aircraft*

Prescribed Forms

AF Form 70, *Pilot's Flight Plan and Flight Log*

AF Form 72, *Air Report (AIREP)*

DD Form 175, *Military Flight Plan*

DD Form 1801, *DoD International Flight Plan*

Adopted Forms

AF Form 679, *Air Force Publication Compliance Item Waiver Request/Approval*

AF Form 847, *Recommendation for Change of Publication*

(**Added-ACC**) DD Form 175-1, *Flight Weather Briefing*

DD Form 2131, *Passenger Manifest*

Abbreviations and Acronyms

AC—Advisory Circular

(Added-ACC) ACBT—Air Combat Training

(Added-ACC) ACC—Air Combat Command

(Added-ACC) ADAIR—Adversary Air

ADIZ—Air Defense Identification Zone

ADS-B—Automatic Dependent Surveillance-Broadcast

AEO—All Engines Operating

AFFSA—Air Force Flight Standards Agency

AFH—Air Force Handbook

AFI—Air Force Instruction

AFJI—Air Force Joint Instruction

AFMAN—Air Force Manual

(Added-ACC) AFMSS—Air Force Mission Support System

AFPD—Air Force Policy Directive

AFRC—Air Force Reserve Command

AFREP—Air Force Representative to the FAA

AGCAS—Automatic Ground Collision Avoidance System

AGL—Above Ground Level

(Added-ACC) AIE—Alternate Insertion/Extraction

AIM—Aeronautical Information Manual

AIRCARD—Aviation Into-Plane Reimbursement Card

AIREP—Air Report

ALS—Approach Lighting System

ALTRV—Altitude Reservation

(Added-ACC) AMC—Air Mobility Command

ANG—Air National Guard

AP—Area Planning

ARCP—Air Refueling Control Point

ARTCC—Air Route Traffic Control Center

ASAP—Aviation Safety Action Program

ASRR—Airfield Suitability and Restrictions Report

ATC—Air Traffic Control

ATCAA—Air Traffic Control Assigned Airspace

(Added-ACC) ATD—Aircrew Training Device

ATIS—Automatic Terminal Information Service

BWC—Bird Watch Condition

C2—Command and Control

CCMD—Combatant Command

(Added-ACC) CD—Chemical Defense

CFIT—Controlled Flight Into Terrain

CFR—Code of Federal Regulations (Formerly FARs)

CMNPS—Canadian Minimum Navigation Performance Standards

CNS—Communications, Navigation, Surveillance

COA—Certificate of Authorization

COMAFFOR—Commander Air Force Forces

(Added-ACC) CTP—Companion Trainer Program

DA—Decision Altitude

(Added-ACC) DAIP—DoD Aeronautical Information Portal

DCS—Decompression Sickness

DER—Departure End of the Runway

DH—Decision Height

DINS—Defense Internet NOTAM Service

DME—Distance Measuring Equipment

(Added-ACC) DOD—Department of Defense

(Added-ACC) DRUs—Direct Reporting Units

(Added-ACC) DSN—Defense Switched Network

EGI—Embedded GPS/INS

EGPWS—Enhanced Ground Proximity Warning System

ELP—Emergency Landing Pattern

ELT—Emergency Locator Transmitter

(Added-ACC) EP—Emergency Procedure

ESA—Emergency Safe Altitude

ETA—Estimated Time of Arrival

ETP—Equal Time Point

FAA—Federal Aviation Administration

FAAO—Federal Aviation Administration Order

FBO—Fixed-Base Operator

FCB—Flight Crew Bulletin

(Added-ACC) FCFs—Functional Check Flight

FCG—Foreign Clearance Guide

FCIF—Flight Crew Information File

FDE—Fault Detection and Exclusion

FDP—Flight Duty Period

FIH—Flight Information Handbook

(Added-ACC) FITS—Fighter Index of Thermal Stress

FL—Flight Level

FLIP—Flight Information Publication

FMC—Flight Management Computer

FMS—Flight Management System

(Added-ACC) FOA—Field Operating Agency

FOD—Foreign Object Damage

FSO—Flight Safety Officer

FSS—Flight Service Station

GCAS—Ground Collision Avoidance System

(Added-ACC) GDSS2—Global Decision Support System

GNSS—Global Navigation Satellite System

GP—General Planning

GPS—Global Positioning System

GPWS—Ground Proximity Warning System

HDD—Head-Down Display

HEEDS—Helicopter Emergency Egress Device System

(Added-ACC) HHQ—Higher Headquarters

HMD—Helmet-Mounted Display

HUD—Head-Up Display

IAP—Instrument Approach Procedure

(Added-ACC) IAW—In Accordance With

ICAO—International Civil Aviation Organization

IFR—Instrument Flight Rules

ILS—Instrument Landing System

IMC—Instrument Meteorological Conditions

INS—Inertial Navigation System

(Added-ACC) IP—Instructor Pilot

IR—Infrared

IR—IFR Military Training Routes

(Added-ACC) IRC—Instrument Refresher Course

ISA—International Standard Atmosphere

(Added-ACC) JMPS—Joint Mission Planning System

JO—Joint Order

JSIR—Joint Spectrum Interference Resolution

KIAS—Knots Indicated Airspeed

KTAS—Knots True Airspeed

LAHSO—Land and Hold Short Operations

(Added-ACC) LATN—Low Altitude Tactical Navigation

(Added-ACC) LCP—Laser Command Pointer

(Added-ACC) LEP—Laser Eye Protection

LNAV—Lateral Navigation

LOA—Letter of Agreement

MAJCOM—Major Command

MAP—Missed Approach Point

(Added-ACC) MARSA—Military Authority Assumes Responsibility for Separation of Aircraft

MDA—Minimum Descent Altitude

MDS—Mission Design Series

MEA—Minimum Enroute Altitude

MEP—Mission Essential Personnel

MNPS—Minimum Navigation Performance Specifications

MOA—Military Operations Area

MOCA—Minimum Obstruction Clearance Altitude

MSA—Minimum Safe Altitude

MSL—Mean Sea Level

(Added-ACC) MSO—Mandatory Scramble Order

MTR—Military Training Route

NAS—National Airspace System

NAT—North Atlantic Track

NAVAID—Navigational Aid

NM—Nautical Mile

(Added-ACC) NORAD—North American Air Defense Command

NOTAM—Notices to Airmen

NVD—Night Vision Device

OAT—Outside Air Temperature

(Added-ACC) OCF—Operational Check Flight

ODP—Obstacle Departure Procedure

OEI—One Engine Inoperative

(Added-ACC) OG—Operations Group

(Added-ACC) OG/CC—Operations Group Commander

(Added-ACC) OIC—Officer in Charge

(Added-ACC) Ops—Operations

OROCA—Off Route Obstruction Clearance Altitude

ORTCA—Off Route Terrain Clearance Altitude

OTC—Over-the-Counter

PANS-OPS—Procedures for Air Navigation Services-Aircraft Operations

PAO—Public Aircraft Operations

PBN—Performance Based Navigation

PBO—Performance Based Operations

PED—Portable Electronic Device

PFR—Primary Flight Reference

PIC—Pilot in Command

PIREP—Pilot Report

PMSV—Pilot-to-Metro Service

PPS—Precise Position Service

PRM—Precision Runway Monitoring

PV—Prevailing Visibility

(Added-ACC) QA—Quality Assurance

RA—Resolution Advisory

RAIM—Receiver Autonomous Integrity Monitoring

(Added-ACC) RCR—Runway Condition Reading

RM—Risk Management

RNAV—Area Navigation

RNP—Required Navigation Performance

RPA—Remotely Piloted Aircraft

RSRS—Reduced Same Runway Separation

RSU—Runway Supervisory Unit

RTRL—Reduced Takeoff Runway Length

RVR—Runway Visual Range

RVSM—Reduced Vertical Separation Minimum

SAR—Search and Rescue

SARP—Standards and Recommended Practices

SBAS—Satellite-Based Augmentation System

SCA—Self-Contained Approach

SDP—Special Departure Procedures

SERE—Survival, Evasion, Resistance, and Escape

SFO—Simulated Flameout

SID—Standard Instrument Departure

SIGMET—Significant Meteorological Information

SM—Statute Mile

SMGCS—Surface Movement Guidance and Control System

SPINS—Special Instructions

SPS—Standard Position Service

SR—Slow Speed Low Altitude Training Routes

SUA—Special Use Airspace

SVFR—Special Visual Flight Rules

TA—Traffic Alert

TAWS—Terrain Awareness and Warning System

TCAS—Traffic Alerting and Collision Avoidance System

TDZ/CL—Touchdown Zone/Centerline Lighting

TDZE—Touchdown Zone Elevation

TEMPO—Temporary

TERPS—Terminal Instrument Procedures

TFR—Temporary Flight Restriction

THRE—Threshold Elevation

T.O.—Technical Order

TOLD—Takeoff and Landing Data

TPP—Terminal Procedures Publication

TSO—Technical Standard Order

UAS—Unmanned Aircraft System

USCG—United States Coast Guard

USG—United States Government

VAAC—Volcanic Ash Advisory Center

VCOA—Visual Climb Over Airport

VFR—Visual Flight Rules

VMC—Visual Meteorological Conditions

VNAV—Vertical Navigation

VR—VFR Military Training Routes

WAAS—Wide Area Augmentation System

WX—Weather

Terms

Aerobatics—Intentionally performed spins, vertical recoveries, and other maneuvers that require pitch and bank angles greater than 90 degrees.

Aircrew Member—An individual, designated on the Flight Authorization who is an aircrew member as explained in AFPD 11-4, *Aviation Service*, AFI 11-402, *Aviation and Parachutist Service, Aeronautical Ratings and Aviation Badges,* and is assigned to a position listed in AFI 65-503, *US Air Force Cost and Planning Factors,* and is designated on orders to fulfill specific aeronautical tasks.

Aircrew or Crew—The full complement of military, civilian and contract personnel required to operate a USAF aircraft and complete an assigned mission.

Air Force Flight Standards Agency (AFFSA)—HQ USAF Field Operating Agency charged with the development, standardization, evaluation and certification of procedures, equipment and standards to support global flight operations.

Anti-collision Lights—The primary flashing light system on the aircraft intended to attract the attention of others to enhance sense-and-avoid operations.

ASAP—An identity protected, self-reporting system designed to encourage the voluntary reporting of issues that increase risk to flight operations.

Augmented Aircrew—A basic aircrew supplemented by additional aircrew members to permit in-flight rest. If the basic aircrew requires only one pilot and a second qualified pilot (includes pilots enrolled in an AETC formal aircrew training course) is designated an aircrew member to augment pilot duties, the crew can be considered augmented.

Automatic Dependent Surveillance—**Broadcast**—A system of two avionics components consisting of a GPS and a transponder (usually Mode S) which will replace radar as the primary surveillance method worldwide. ADS-B consists of two different services: “ADS-B Out” transmits aircraft position to ATC and other aircraft, and “ADS-B In” which receives position of other aircraft and may include separation applications.

Basic Aircrew—Aircrew positions as defined in the aircraft T.O. (or MDS-specific AFI) for the normal operation of the aircraft or mission.

Civil Twilight—Evening Civil Twilight is the period that begins at sunset and ends in the evening when the center of the sun's disk is 6 degrees below the horizon. Morning Civil Twilight begins prior to sunrise when the center of the sun's disk is 6 degrees below the horizon, and ends at sunrise. Use an authorized weather source, the latest version of the Air Almanac, MAJCOM-approved computer program, or US Naval Observatory data to determine and calculate sun and moon data. Both periods of twilight are considered "day", unless further restricted by the MAJCOM.

Critical Phase of Flight—In the absence of MAJCOM guidance, this term should include: terminal area operations including taxi, takeoff and landing, low-level flight, air refueling, airdrop, weapons employment, flight using NVDs, tactical/air combat and formation operations (other than cruise), and all portions of any test or functional check flight or any aerial demonstration.

(Added-ACC) Critical Phases of Flight—Takeoff, rejoin to close formation (inside 1 NM to close formation for non-fighter aircraft), close formation (fingertip/close trail), air-to-air refueling, actual live or inert weapon deliveries, simulated weapons deliveries (other than level deliveries), ACBT, tactical maneuvering where the bank angle exceeds 45 degrees, low altitude flight (helicopters below 500 feet AGL. Fighter/Attack/CTP below 1000 feet AGL. All other aircraft below 5000 feet AGL.), approach and landing. Additionally for RPA: MCE-LRE transfer of control.

Day—The time between the beginning of morning civil twilight and the end of evening civil twilight, as published in the Air Almanac.

Decision Altitude (DA) / Decision Height (DH)—A specified altitude during a precision approach at which a decision must be made to either continue the approach if the pilot acquires the required visual references, or immediately executes a missed approach. Decision Altitude is referenced to mean sea level and Decision Height is referenced to the threshold elevation.

Diverse Vector Area (DVA)—An area in a radar environment established at the request of Air Traffic that meets TERPS criteria for diverse departures, obstacles and terrain avoidance. Within a DVA, random radar vectors below the MVA/MIA may be issued to departing aircraft.

Emergency Fuel—The point at which it is necessary to proceed directly to the airport of intended landing due to low fuel. Declaration of "emergency fuel" is an explicit statement that priority handling by ATC is both required and expected.

FAA Exemption or Authorization—An official written FAA document which provides the petitioner relief from specified parts of the CFRs.

Fault Detection and Exclusion (FDE)—A RAIM algorithm that can automatically detect and exclude a faulty satellite from the position solution when a sufficient number of redundant satellite measurements are available.

Flight Management Computer (FMC) / Flight Management System (FMS)—An on-board computer system that automates a wide variety of in-flight tasks, to include flight plan management, multi-sensor navigation, aircraft guidance, and performance management.

Formation Flight—More than one aircraft which, by prior arrangement between the pilots, operates as a single aircraft with regard to navigation and position reporting. Separation between

aircraft within the formation is the responsibility of the flight leader and the pilots of the other aircraft in the flight. This includes transition periods when aircraft within the formation are maneuvering to attain separation from each other to effect individual control and during join-up and breakaway. Such a group is treated for ATC purposes as a single aircraft.

Fuel Reserve—The amount of usable fuel that must be carried on each aircraft beyond that required to complete the flight as planned.

Global Navigation Satellite System (GNSS)—A generic term for satellite-based navigation, including GPS, SBAS/WAAS, and any other satellite navigation or augmentation system suitable for aviation use.

Global Positioning System (GPS)—The United States satellite-based radio navigation system that provides a global positioning, navigation, and timing service.

Ground Control Element—Comprises the UAS ground control station, power generation units, communications infrastructure and antenna arrays.

ICAO—The International Civil Aviation Organization (a UN Specialized Agency), headquartered in Montreal, Canada, is the global forum for civil aviation that works to achieve its vision of safe, secure, and sustainable development of civil aviation through cooperation amongst its member States. Promotes understanding and security through cooperative aviation regulation.

Inertial Navigation System (INS)—A self-contained dead reckoning system that senses acceleration along the three axes of the aircraft and calculates the distance traveled from a reference point. Accuracy of the system decreases with time.

Instrument Meteorological Conditions (IMC)—Ceiling, visibility, and cloud clearances that do not meet the criteria for VMC.

Land and Hold Short Operations (LAHSO)—Procedures developed to expedite traffic flow at civil and joint-use airports needing additional tools to increase capacity. Allows civilian aircraft to operate on intersecting runways simultaneously.

Lateral Navigation (LNAV)—RNAV non-precision approach providing lateral guidance.

Low Close—in Obstacles—Those obstacles within the Initial Climb Area that require an excessive climb gradient to a climb-to-altitude of 200 ft. or less above the Departure End of Runway elevation or alternate takeoff weather minimums. These obstacles are published in NOTAMs, on the SID chart, or in the IFR Take-off Minimums and (Obstacle) Departure Procedures section ▼ of the terminal procedure booklet. Typical chart notation is: “NOTE: Rwy 17L, tree 5610' from DER, 212' left of centerline, 82' AGL/2723' MSL.”

Minimum Fuel—Indicates that an aircraft's fuel supply has reached a state where, upon reaching the destination, it can accept little or no delay. This is not an emergency situation but merely indicates an emergency situation is possible should any undue delay occur.

Minimum Navigation Performance Specification (MNPS)—Implemented in the North Atlantic region between FL285-420 and specifies a number of equipment, training, and procedural requirements. MNPS navigation accuracy is equivalent to RNP 12.6. Dual long-range navigation systems (LRNS) and dual long-range communication systems are required. RVSM is mandatory in MNPS airspace. Aircraft that cannot meet dual LRNS requirements may be accommodated on

special routings ("Blue Spruce" routes). Aircraft that cannot meet RVSM requirements are excluded from MNPS airspace unless operating on an ALTRV.

Mode 4—Transponder mode established to enable IFF (Identification Friend or Foe) functions between military aircraft or military aircraft and military ground stations. Uses classified codes, but operates on 1030 MHz and 1090 MHz; the same frequency pair used by the Air Traffic Control Radar Beacon System that civil air traffic uses for Mode 3A/C, Mode S, and TCAS. Mode 4 interrogation signals can suppress civil airborne transponders; therefore all Mode 4 operations in the NAS require prior authorization through the Air Force Frequency Management Agency (AFFMA): **affma.cc@pentagon.af.mil.**

Mode 5—Performance upgrade to the current Mark XII IFF transponder system. Mode 5 provides new waveforms, new cryptography, more data, and improved radio frequency (RF) link margin to resolve many of the deficiencies identified with Mark XII. It will eventually replace the analog Mode 4 IFF system with digital IFF message formats which embed unprecedented combat relevant data.

Mode S—The primary role of the Mode S transponder is to "selectively" respond to interrogations, as opposed to responding to all interrogations, from a ground sensor or TCAS to provide airborne data information including identification, equipage, and altitude.

Mountainous Terrain—In the absence of other MAJCOM guidance, USAF aircrews shall consider as mountainous those areas defined in 14 CFR §95.11 for CONUS, Alaska, Hawaii and Puerto Rico. In other areas, use 500 ft. surface elevation change over a ½ NM.

National Airspace System (NAS)—The NAS is the common network of *United States* (U.S.) airspace: air navigation facilities, equipment, services, airports or landing areas, aeronautical charts, information/services, rules, regulations, procedures, technical information, manpower, and material. Included are system components shared jointly with the military. *United States*, in a geographical sense, means (1) the States, the District of Columbia, Puerto Rico, and the possessions, including the territorial waters (within 12 nautical miles) and (2) the airspace of those areas. **Note**: IAW ICAO Article 12 and Annex 2 and 11, the United States has accepted responsibility for providing air traffic services within airspace overlying the high seas beyond 12 miles from the coast (also known as international airspace). These flight information regions of international airspace include: Oakland Oceanic, Anchorage Oceanic, Anchorage Continental, Anchorage Arctic, Miami Oceanic, Houston Oceanic and New York Oceanic. Aircrews should be aware that although they are being provided air traffic services by the FAA, they are operating in international airspace and ICAO SARPS, FLIP, and AFIs are applicable.

Navigation Specification—A set of aircraft and aircrew requirements needed to support performance-based navigation operations within a defined airspace. Comprised of RNAV and RNP specifications.

Night—The time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the Air Almanac.

Non—Standard Formation—Operations under any of the following conditions: 1. When the flight leader has requested and ATC has approved other than standard formation dimensions (≤1 NM lateral separation or ≤ 100 ft. vertical separation), 2. When operating within an authorized altitude reservation (ALTRV) or under the provisions of a letter of agreement, 3. When operations are conducted in airspace specifically designed for a special activity.

OROCA—An off-route altitude which provides obstruction clearance with a 1,000 ft. buffer in non-mountainous terrain areas and a 2,000 ft. buffer in designated mountainous areas within the United States. This altitude may not provide signal coverage from ground-based navigational aids, air traffic control radar, or communications coverage.

ORTCA—An off-route altitude that provides terrain clearance with a 3,000 ft. buffer from terrain. This altitude may not provide signal coverage from ground-based navigational aids, air traffic control radar, or communications coverage. This altitude is used on enroute charts covering those areas outside the United States.

P-Airfield—Civil airport that permits use by transient military aircraft.

Passenger—An individual onboard the aircraft who is not on the flight authorization. See AFI 11-401 for further guidance.

Performance-Based Operations (PBO)—Operations based on stated aircraft and aircrew performance requirements addressing communications, navigation, and surveillance systems.

Portable Electronic Devices (PEDs)—Portable electronic devices which are not installed on an aircraft as standard equipment. PEDs may include temporary mounts, a data interface, an external antenna, and may require aircraft electrical power.

Precise Positioning Service (PPS)—GPS service available to authorized users via the encrypted P(Y) code ranging signal. PPS can offer greater accuracy and resistance to jamming and spoofing.

Predictive RAIM (P-RAIM)—Using a standard set of algorithms, the availability of RAIM may be determined based on the satellite coverage expected at an aircraft's ETA. Due to terrain masking and other factors (e.g., satellite fails after RAIM prediction made), P-RAIM does not guarantee there will be sufficient satellite coverage on arrival. P-RAIM does not have to reside in the GPS receiver. It can be provided by FAA Flight Service (US NAS only) and other ground- based RAIM algorithms.

Prevailing Visibility (PV)—The greatest horizontal visibility observed throughout at least half of the horizon circle. It need not be continuous throughout 180 consecutive degrees.

Primary Flight Reference (PFR)—Any display or suite of displays and instruments used to present the basic flight information needed for immediate control of the aircraft. PFR includes attitude (climb/dive angle or pitch and vertical velocity, bank angle, and a prominent horizon reference), indicated or calibrated airspeed, barometric altitude, heading, appropriate fault indications, and the capability to recognize and recover from an unusual attitude. UAS PFR includes link status, flight guidance mode, and logic.

PRM Approach—An instrument landing system (ILS) approach conducted to parallel runways whose extended centerlines are separated by less than 4,300 ft. and the parallel runways have a PRM system that permits simultaneous independent ILS approaches.

Procedures for Air Navigation Services-Aircraft Operations (PANS-OPS)—ICAO documents detailing specific procedures for the safety of air traffic navigation agreed to by ICAO signatories.

Radar Required—This note on an instrument procedure indicates aircraft using the procedure will be monitored by ATC radar during a particular phase of flight or throughout the entire procedure, as applicable. Coordination with air traffic is necessary to ensure ATC capability and agreement to provide these services before adding the note to any instrument procedure.

Receiver Autonomous Integrity Monitoring (RAIM)—An algorithm that verifies the integrity of the position output using redundant GPS measurements, or using GPS measurements and barometric aiding. An algorithm that uses additional information (e.g., multi-sensor system with inertial reference system) to verify the integrity of the position output may be acceptable as a RAIM-equivalent.

Reduced Same Runway Separation—Allows reduction of the normal ATC aircraft separation standards during landings and touch-and-goes and restricted low approach operations to increase the airport/runway capacity.

Reduced Takeoff Runway Length Procedure (RTRL)—Method used by TERPS to reduce high IFR climb gradients by shortening the available takeoff runway, thus increasing the distance to the obstacle, spot elevation, or terrain feature. It is normally printed in the IAP ▼ section. An example of an RTRL is *"…or with standard takeoff minimums and a normal 200'/NM climb gradient, takeoff must occur no later than 2200' prior to departure end of runway."*

Reduced Vertical Separation Minimum (RVSM)—Reduces the vertical separation between properly equipped and certified aircraft to 1000 ft. in special qualification airspace, normally between FL290-410 inclusive.

Remotely Piloted Aircraft—The aircraft portion of an unmanned aircraft system.

Remote/Island Destination—In the absence of more restrictive MAJCOM guidance, pilots will consider a remote/island destination as any aerodrome that, due to its unique geographic location, offers no suitable alternate within two hours flying time.

RNAV (Area Navigation) Specification—A navigation specification based on RNAV that does not include the requirement for on-board performance monitoring and alerting, designated by the prefix RNAV (e.g., RNAV 5, RNAV 1).

RNAV (Area Navigation) System—A navigation system which permits operation on any desired flight path within the coverage of ground-based, space-based, or self-contained navigation aids, or a combination of these.

RNP (Required Navigation Performance) Specification—A navigation specification based on RNAV that includes the requirement for on-board performance monitoring and alerting, designated by the prefix RNP (e.g., RNP 4, RNP APCH).

RNP (Required Navigation Performance) System—An RNAV system which supports on-board performance monitoring and alerting.

Runway Environment—The runway environment consists of one or more of the following elements: The approach light system (except that the pilot may not descend below 100 ft. above the Touch Down Zone Elevation using the approach lights as a reference unless the red termination bars or the red side row bars are also visible and identifiable), the threshold, threshold markings or threshold lights, the runway end identifier lights, the touchdown zone lights, the runway or runway markings, the runway lights, the visual approach slope indicator. For more information refer to AFMAN 11-217.

Runway Visual Range (RVR)—The maximum distance in the direction of takeoff or landing at which the runway, or the specified lights or markers delineating it, can be seen from a position above a specified point on its center line at a height corresponding to the average eye-level of pilots

at touch down. This value is normally determined by instruments located alongside and about 14 ft. above the runway and calibrated with reference to the high-intensity runway lights.

Satellite Based Augmentation System (SBAS)—Generic term for a wide coverage augmentation system to GNSS that calculates integrity and correction data on the ground and uses geostationary satellites to broadcast the data to SBAS users.

Self-Contained Approach—An arrival procedure, normally from an IFR altitude, to a runway, using only navigational equipment onboard the aircraft (GPS, radar, or other sensors).

Single Medium Display—A single medium display is a Head-Up Display (HUD), Head-Down Display (HDD), or Helmet-Mounted Display (HMD) presenting flight instrumentation on a single display such as a HUD combiner, a "glass" multifunction display, or a helmet visor.

Special Departure Procedure (SDP)—A procedure designed to allow a safe takeoff for multi-engine aircraft whose OEI climb rate would otherwise not meet the TERPS minimum climb gradient requirement. The runway and all known obstacles along a chosen takeoff path are analyzed and compared to the aircraft OEI takeoff and climb performance. The procedure provides a maximum allowable takeoff gross weight for given environmental conditions that ensure vertical and lateral obstacle clearance safety margins. The minimum allowable gross and net climb gradients for SDPs are typically lower than TERPS standards. Unlike TERPS, the takeoff path is selected to minimize obstacle clearance requirements and only those obstacles within the lateral limits of the chosen flight path are considered. Pilots should understand that most SDPs allow exactly zero feet of clearance between their aircraft and the offending obstacles, and provide no safety factor for pilot technique, less than 100% engine thrust, etc. The term SDP encompasses both the use of the textual obstacle data table information and the graphical departure procedures.

Standard Formation—A formation in which no participating aircraft is more than 1 NM horizontally and 100 ft. vertically from the lead aircraft.

Standard Positioning Service (SPS)—GPS service available to all users via the course/ acquisition (C/A) code ranging signal.

Stopover Flight—A flight where intermediate stops are planned enroute to a final destination.

Strobe Lights—Systems such as wingtip strobes or other similar strobe light installations.

Tactical Operations—Flight operations consisting of maneuvers that are unique to the employment of air power to: gain and maintain air superiority, prevent freedom of operation for the enemy in the objective area, and to assist naval and ground forces in the attainment of their objectives. Tactical operations must be specifically MAJCOM (or CCMD) defined, approved and implemented. These operations are normally practiced only on training or exercise missions, in a form of special use airspace or on designated training ranges or routes.

Terminal Area Operations—Terminal area operations are normally those flight phases conducted within 30 NM of an airfield of intended departure or landing, or those operations on charted Standard Instrument Departures, on charted Standard Terminal Arrivals (STARs), or other flight operations between the last enroute fix/waypoint and an initial approach fix/waypoint.

Terrain Alert Warning System (TAWS)—Generic term for any on-board system taking inputs from terrain databases, radar altimeter, aircraft position sensors, etc. to activate a Ground Proximity Warning System or Automatic Ground Collision Avoidance System (AGCAS). Developed to help prevent Controlled Flight Into Terrain (CFIT) mishaps.

Traffic Collision Avoidance System (TCAS)—An airborne system that functions independently of the ground-based radar to provide collision avoidance protection between suitably equipped aircraft. TCAS I provides proximity warnings to pilots in the form of traffic advisories. TCAS II provides both traffic advisories and recommended vertical escape maneuvers, known as resolution advisories.

Unmanned Aircraft System (UAS)—Includes one or more control stations, one or more unmanned aircraft, aircraft control and payload datalinks, and mission payloads, designed or modified not to carry a human pilot and operated through remote or self-contained autonomous control. A UAS must meet all applicable requirements of a manned aircraft unless specifically exempted. The term RPA is specific to the Remotely Piloted Aircraft (the flying portion of the UAS).

Unmonitored Navigational Aid—Most NAVAIDs have internal monitoring systems that provide automatic shutdown or notification when a malfunction occurs. Unmonitored NAVAIDs lack the ability to immediately notify ATC when a malfunction occurs. The pilot may still use the NAVAID for all types of navigation, including instrument approaches, but must monitor the NAVAID for a loss of identification since no prior warning of operation may be available from ATC.

Vertical Navigation (VNAV)—A term that describes using GPS lateral and vertical guidance to define the minimums for a GPS non-precision or precision approach.

VFR-on-Top—ATC authorization for an IFR aircraft to operate in VFR conditions at any appropriate VFR altitude (as specified in FLIP and restricted by ATC). A pilot receiving this authorization must comply with VFR visibility, cloud distance criteria, and minimum IFR altitudes.

VFR-over-the-Top—VFR flight maneuver during which an aircraft on a VFR flight plan climbs over a ceiling in VMC, maintains VMC above the clouds, then descends in VMC and lands.

Visual Meteorological Conditions (VMC)—Meteorological conditions in which visual flight rules may be used; expressed in terms of visibility, ceiling height, and aircraft clearance from clouds along the path of flight. When these criteria do not exist, instrument meteorological conditions prevail and instrument flight rules (IFR) must be followed.

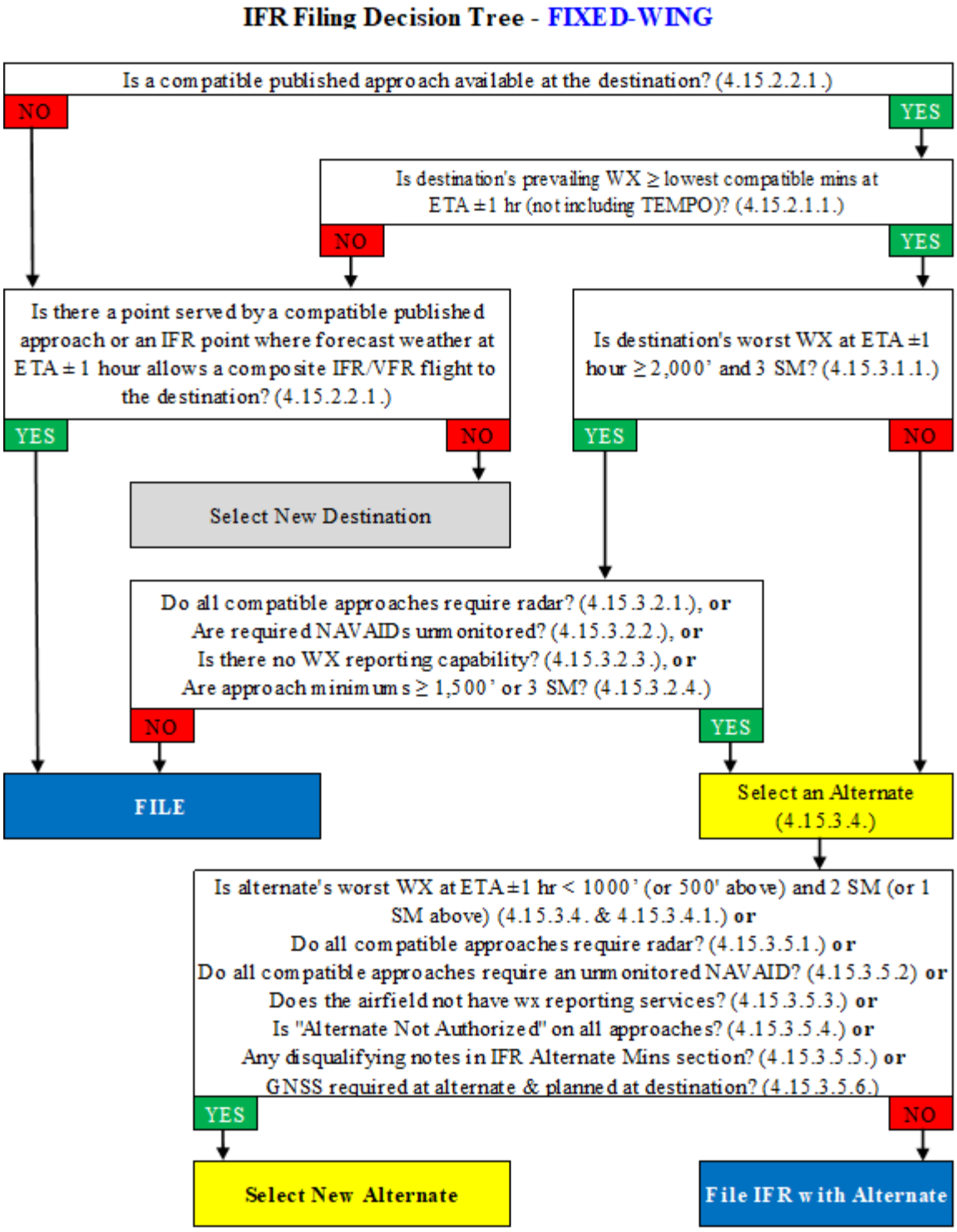
WGS—84—World Geodetic Survey-1984: Developed by the U.S. for world mapping, WGS 84 is an earth fixed global reference frame. It is the ICAO standard.

Wide Area Augmentation System (WAAS)—The U.S. implementation of SBAS which augments GPS SPS.

Attachment 2

IFR FILING DECISION TREE – FIXED-WING

Figure A2.1. Test.

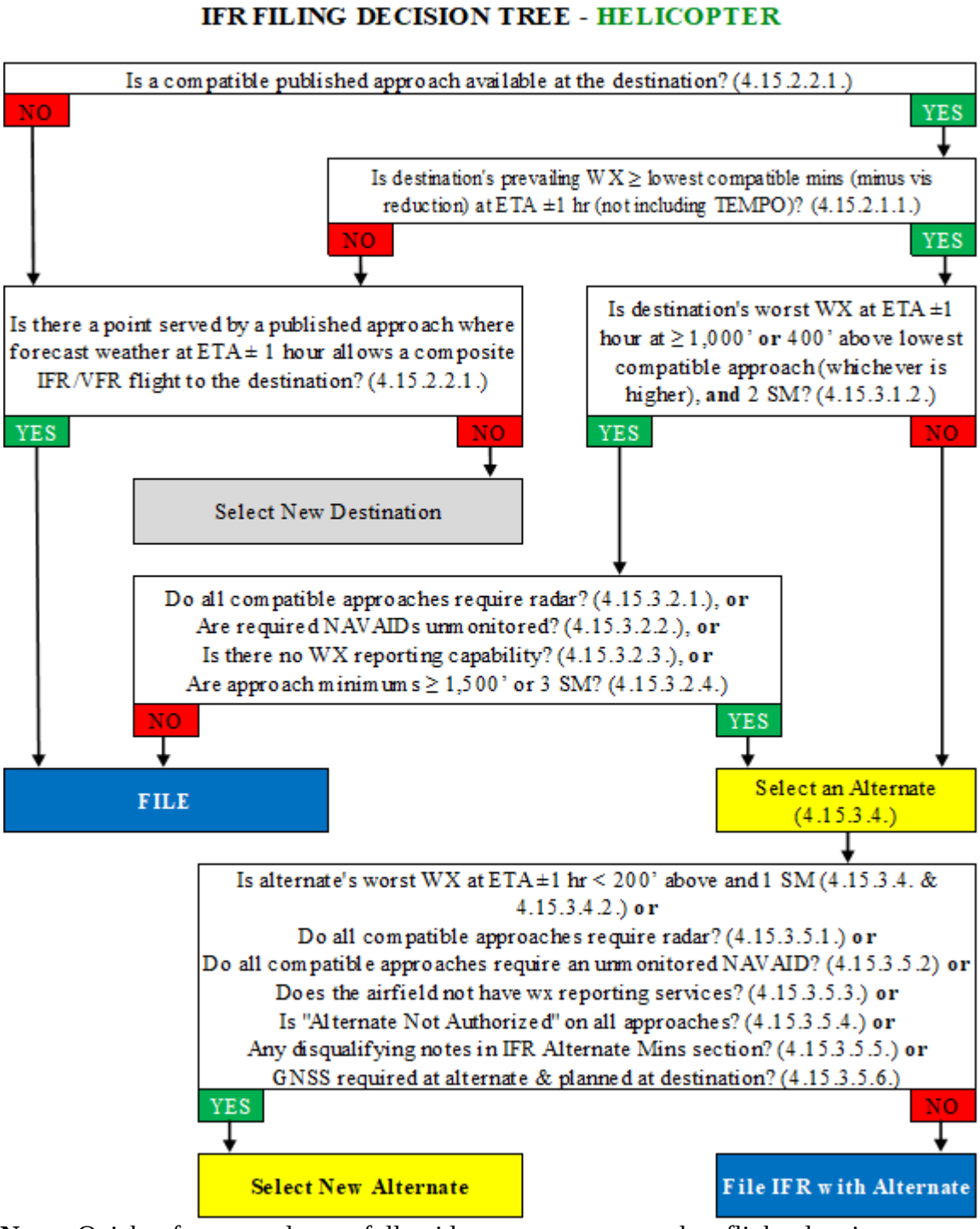


Note: Quick reference only; see full guidance to ensure complete flight planning.

Attachment 3

IFR FILING DECISION TREE - HELICOPTER

Figure A3.1. Test.

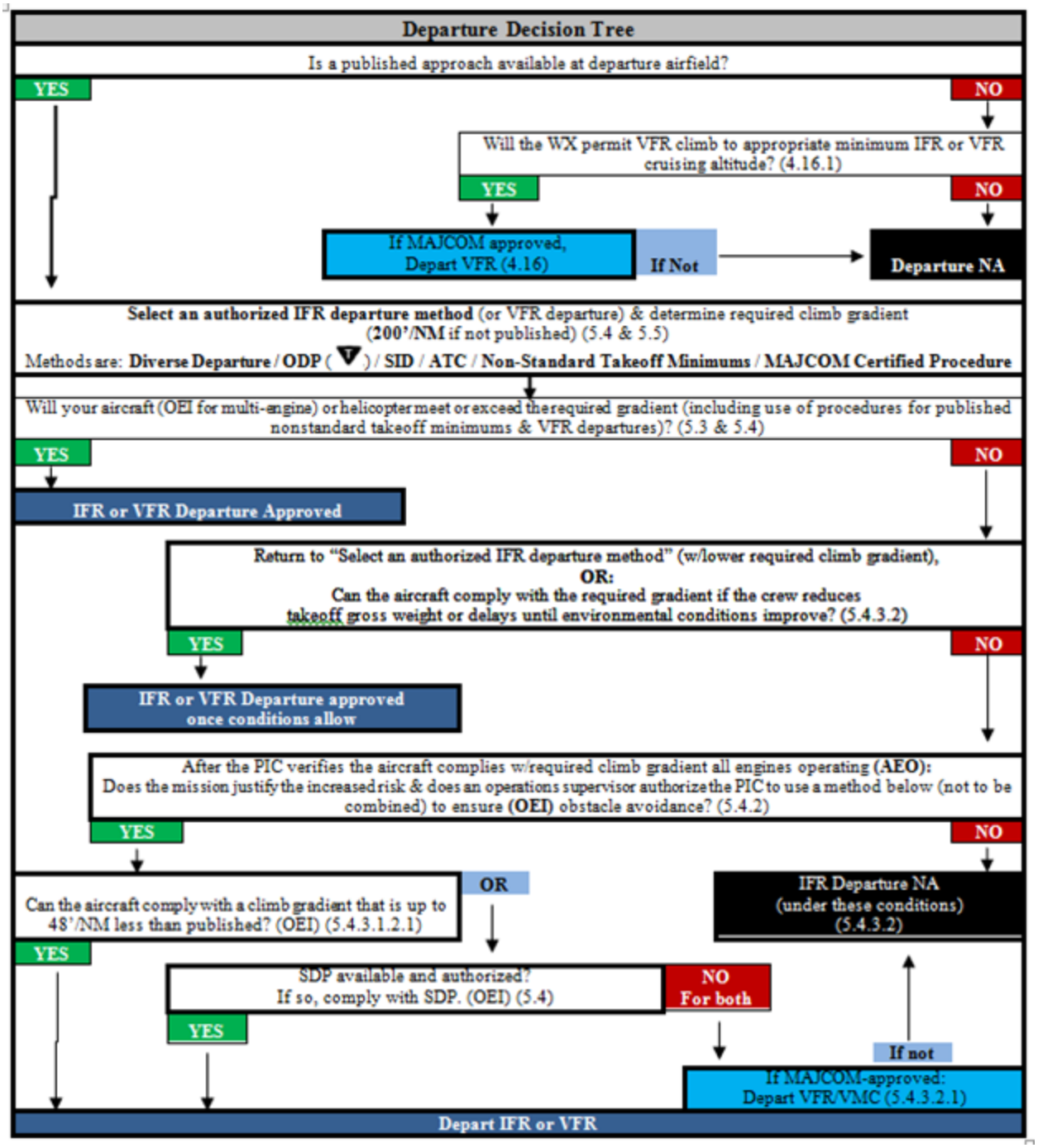


Note: Quick reference only; see full guidance to ensure complete flight planning.

Attachment 4

DEPARTURE DECISION TREE

Figure A4.1. Test.



Note: PICs shall conduct departure planning IAW AFMAN 11-217 and this instruction.

Attachment 5 (Added-ACC)

FIGHTER INDEX OF THERMAL STRESS (FITS) CHART

A5.1. (ACC) FITS. Fighter Index of Thermal Stress in ºF (Clear Sky to Light Overcast):

A5.1.1. **(ACC)** General. Use the FITS chart as a guide only. The chart must not be the sole determining factor in flying or canceling sorties. Reference the additional guidance in AFI 48-151, *Thermal Injury Prevention Program*. The decision remains with the commander based on the advice of the flight surgeon.

A5.1.2. **(ACC)** Instructions. Enter with local dry bulb temperature and dew point temperature; at intersection read FITS value and zone. The X denotes combinations above saturation temperature. This table is not to be used when full chemical defense, immersion or arctic flight equipment is worn.

Table A5.1. (ACC) FITS Reference Values and Advisory Flag Colors.

NORMAL ZONE		CAUTION ZONE		DANGER ZONE					
<90º F		90 – 100º F		101 – 115º F			>116º F		
Dry Bulb Temperature	Zone	Dew Point Temperature							
(F)		30	40	50	60	70	80	90	100	> 110
70		70	73	76	81	86	X	X	X	X
75		74	77	80	84	89	X	X	X	X
80	NORMAL	77	80	83	87	92	98	X	X	X
85		81	83	86	90	95	101	X	X	X
90		84	87	90	93	98	104	110	X	X
95		88	90	93	96	101	108	112	X	X
100		91	93	96	99	104	109	115		X
105	CAUTION	94	96	99	102	107	112			X
110		97	99	102	105	109	114			
115		100	102	105	109	112				
120	DANGER	104	105	108	111	115				

A5.1.3. **(ACC)** Zone Explanation and Comments:

A5.1.3.1. **(ACC)** Caution Zone:

A5.1.3.1.1. **(ACC)** Limit ground period (preflight and ground standby) to 90 min. or less.

A5.1.3.1.2. **(ACC)** Minimum of 30 consecutive minutes of inactivity in an air-conditioned environment between flights.

A5.1.3.2. **(ACC)** Danger Zone:

A5.1.3.2.1. **(ACC)** Cancel low-level flights (below 3,000 feet AGL) if air conditioning is inadequate.

A5.1.3.2.2. **(ACC)** Limit Ground period to a maximum of 45 min.

A5.1.3.2.3. **(ACC)** Minimum of 30 consecutive minutes of inactivity in an air-conditioned environment between flights.

A5.1.3.3. **(ACC)** Cancellation Zone: When value is greater than 115, cancel all nonessential flights, including all Chemical Defense (CD) training flights.

A5.1.3.4. **(ACC)** NOTES:

A5.1.3.4.1. **(ACC)** "Ground period" time starts when pilots leave the air-conditioned facility and ends with canopy down and environmental systems functioning correctly. In the aircraft with the environmental system functioning correctly is considered an air-conditioned facility.

A5.1.3.4.2. **(ACC)** Ground period time, under caution zone and danger zone, for all blocks of A-10/F-15/F-16/F-22/F-35 does not include time spent on the ground with canopy down and environmental systems functioning correctly. If environmental system is functioning correctly, restrictions to low level flights and recovery time between flights does not apply to A-10/F-15/F-16/F-22/F-35 aircrews.

A5.1.4. **(ACC)** Comments:

A5.1.4.1. **(ACC)** This chart applies only to lightweight flight clothing to include COMBAT EDGE equipment and Chemical Defense (CD) training gear. CD training in the caution and danger zones should be limited to wearing of flight helmet, CD mask, filter pack/blower and Nomex flight gloves. Every effort should be taken to limit direct exposure to high temperatures by keeping the aircraft sheltered for as long as possible and cooling the cockpit as much and soon as possible. Observe the following general hot-weather precautions:

A5.1.4.1.1. **(ACC)** Allow time for acclimatization to hot weather; avoid extreme efforts on the first several days of exposure.